

Students' Expectations of Team Onboarding Support in Agile Software Development

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Abstract

In modern agile software development environments, teamwork is the core of software development. Good collaboration of development teams can improve productivity, which contributes to the success of an organization's product development. Team productivity can be negatively affected by several factors, and a common situation that can have a negative effect on collaboration and productivity is a new person joining an existing team. There are many possible onboarding strategies and practices and ideally, these are personalised to a particular context so that a new team member becomes integrated and productive in a way that is rapid and motivating. However, effective onboarding continues to be challenging to software development teams and is growing in prevalence, as the demand for software development expertise, and hence new team members increase. The need for onboarding support is particularly amplified when the new team member is a recent graduate who is new to the organisation as well as the team, and it is this situation that is being investigated.

Previous research (Yang, 2017) has provided insights into what team onboarding practices were prevalent in local organisations and the expected outcomes of these practices, within the context of agile software development teams. The objective of that research was to guide the employers' designs of onboarding strategies for desired outcomes for a particular team context. The research in this thesis adds another perspective: that of the prospective new team members. Imminent graduates in software development are representative of this view, with a variety of experience and expectations.

The approaches taken to discover the expectations for onboarding support from the perception of students are based on both online survey and semi-structured interview approaches. The expected onboarding support including activities, resources and durations were mainly gathered from the analysis of online surveys of 58 students from different institutions in New Zealand, along with and the preferences for the current onboarding activities used in practice from the statistical analysis of these students' responses. The onboarding goals were identified from the semi-structured interviews with 10 students from Auckland University of Technology.

The results show that there is some onboarding support different from the perception of practitioners identified in Yang (2017). For example, quite many students expected to work in a comfortable and friendly team environment and the physical materials like laptop were expected to be provided. In addition, students' perceptions for expected onboarding goals of the activities used in current agile development teams turned out to be significantly different, compared to the practitioners' perceptions in Yang (2017), and some possible reasons were discussed to explain the differences.

This thesis helps the agile development teams understand the expectations for onboarding support from the perception of students and the differences from the practitioners' perceptions in Yang (2017), which can guide the employers to provide effective onboarding approaches for new graduate employees to maximize the success of onboarding, and thereby improving the productivity of the teams and organizations.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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1 Introduction

This chapter introduces the research questions, and describes the motivation for the research and the research approach to answer the research questions. Finally, an overview of the structure of this thesis is summarised. Firstly, a working definition of “team onboarding” is presented, since this is central to the context of the research.

1.1 Definition of “Onboarding”

Onboarding is a synonym for certain processes that take place when a new employee starts working, such as how the new employee is introduced to new co-workers, the work environment and the new job (Black *et al.*, 1991; Dealtry, 2008; Doherty, 2013). This thesis focuses on the context of *team onboarding* rather than this broad context of onboarding a new employee into an organisation. While there may be some overlap between the meaning, goals and techniques, I will be focusing on investigating what onboarding support students expect as a new team member joining an existing Agile development team. The emphasis is on onboarding support that will help the newly graduated student to become effective, collaborative team members.

The term “Onboarding” used throughout this thesis will be used to mean “the process and activities that happen between when a recent graduate starts as a completely new team member and when they feel that they are integrated into the team, understanding how to work and delivering what is expected of them”.

1.2 Research Motivation

In modern agile software development environments, teamwork is at the core of software development. Good collaboration of development teams can improve productivity, which contributes to the success of an organization’s product development. Team productivity can be negatively affected by several factors, and a common situation that can have a negative effect on collaboration and productivity is a new person joining an existing team. There are many possible onboarding strategies and practices and ideally, these are personalised to a particular context so that a new team member becomes integrated and productive in a way that is rapid and motivating. However, effective onboarding continues to be challenging to software development teams and is growing in prevalence, as the demand for software development expertise, and hence new team members increase. The need for onboarding support is particularly amplified when the new team member is a recent graduate who is new to the

organisation as well as the team, and it is this situation that is being investigated (Bauer & Erdogan, 2011).

Previous research (Yang, 2017) has provided insights into what team onboarding practices were prevalent in local organisations and the expected outcomes of these practices, within the context of agile software development teams. The objective of that research was to guide the employers' designs of onboarding strategies for desired outcomes for a particular team context. The research in this thesis adds another perspective: that of the prospective new team members. Imminent graduates in software development are representative of this view, with a variety of experience and expectations.

The current software development organizations tend to be more concerned with the organizational priorities and values while neglecting the personal development of new employees, especially recent graduates, in the process of designing and providing an onboarding program for them (Golubski, 2011). This is not only detrimental to the individual adaptability, positive attitude and good self-esteem of the graduate employees, but also may influence their engagement and retention with the organizations (Vance, 2009). Although organizations clearly recognize the importance of onboarding to their new graduate employees, that doesn't necessarily mean they are getting it right. By knowing the needs and expectations of new graduate employees for onboarding support in agile development teams, the organizations can then provide an appropriate and effective onboarding approach to give their new graduate employees a positive onboarding experience, helping to nurture and develop them to become engaged, motivated and productive.

This thesis builds on the previous research Yang (2017) which investigated the team onboarding experiences of practitioners. In the research Yang (2017), different team onboarding practices were identified and grouped, based on interviews of 11 team members in 8 different organisations. The contribution of each of these practices to achieving different onboarding goals was then investigated using a Repertory Grid technique with these participants. The research in this thesis uses the onboarding practices and goals from this prior study to investigate what prospective graduates are expecting by way of onboarding support when they join existing development teams. The expectations of students and the actual practice can then be compared and contrasted. This can help employers meet and/or modify the onboarding expectations of graduate employees and will also bring a higher level of awareness of onboarding possibilities and challenges to both the student body and their prospective employers.

1.3 Research Objective and Question

This study aims to broadly investigate the student expectations of onboarding support into existing agile development teams and to understand both main trends in expectations of students and the students with previous relevant work experience, so as to see the interesting patterns in contrast to the perceptions of practitioners' in Yang (2017). I would also like to gain some deep insights into the reasons of the difference between the perceptions of students and practitioners through the following research questions:

- RQ1: What are the main expectations that students have about how they will be supported (i.e. onboarding techniques) to onboard onto a team in their next software development job.
- RQ1A: How do the expectations of students compare for students with previous team development experience?
- RQ2: What are the students' perceptions of the levels of contribution of different onboarding techniques to achieving different onboarding goals?
- RQ3: How do expectations of students compare with the team onboarding techniques and goals identified by practitioners?

1.4 Research Approach and Design

One research method used to answer these questions involves the use of an online survey of students to understand the broad picture and identify different patterns in students' perceptions for onboarding support compared to the practitioners' perceptions in Yang (2017).

Before I start doing the research, I conducted a literature review about how agile software development team managers provide onboarding support for new members joining the teams, which laid a theoretical foundation for the following research analysis. In particular, the study from Yang (2017) provided the basis for the following questions of online surveys, in order to compare the students' perceptions with the practitioners' perceptions.

Then an online survey was used to understand the broad picture about what students expect of onboarding support into existing agile development teams as recent graduates and identify the different patterns compared with the practitioners' perceptions. The answer to the survey indicated the expected onboarding activities, resources and durations of students, as well as their preferences for the onboarding activities used in current agile development teams. The quantitative data collected from the online surveys was analysed to answer RQ1 and RQ1A.

This survey was complemented by a set of semi-structured interviews to provide more depth of understanding of students' perceptions and why. According to S. E. Hove & B. Anda (2005), using interviews in research can help the researcher collect data about the expected onboarding outcomes of the activities used in current agile development teams that cannot be obtained using online surveys.

While using semi-structured interviews, questions were prepared ahead of time so that I could just appear prepared and competent during the interview. The interviewees were allowed to express their own views in their own terms. The data collected from the conversations with the participants in this research was analyzed through thematic content analysis (TCA) (Clarke & Braun, 2014) to answer RQ2.

Combined with the online survey and semi-structured interview results, students' perceptions can be then compared with the practitioners' perceptions for onboarding outcomes identified in Yang (2017), which answers RQ3.

1.5 Structure of Thesis

After the introduction of chapter one, chapter two elaborates the research context of this study. Literature review provides two models of the onboarding process. One of the models provides the expected organizational outcomes in current agile development teams and the other model provides the onboarding activities used in practice. Chapter three presents the research methods adopted in this study, along with the process and approaches of the data gathering and analysis. Chapter four elaborates the findings and discussions of the analysis of data collected from online surveys and semi-structured interviews. Chapter five summarizes the main results obtained from chapter four to answer the research questions explicitly, as well as indicates the limitations and threats of this study and the further research that could be made.

2 Literature Review

This chapter describes the meaning and importance of onboarding process. It also presents the definition of “onboarding” in the context of agile development teams, as well as indicates the aspects that can influence team onboarding and organizational outcomes, which provide the research directions and a theoretical basis for this study.

2.1 Introduction

This study investigated the expectations for onboarding support from the perception of students. The literature review provided a definition for the onboarding in the context of agile software development teams and indicates the importance of onboarding support for new employees to integrate into the teams from the perceptions of practitioners and organizations. The perception of organizations provided a broad picture about the factors influencing the adjustment of new employees during the onboarding process in organizations and explained how the factors affected the outcomes of new employee adjustment. The perception of practitioners gave a deep understanding about the activities influencing the adjustment of new employees during the onboarding process in development teams and identifies the expected onboarding outcomes of the activities to new employee adjustment.

2.2 Meaning and Importance of Onboarding Process

Onboarding is the process to integrate new employees into an organization, which prepares them to the success to their work and helps them become fully engaged, productive members of the organization (Bauer & Erdogan, 2011).

In the research of Pike (2014), a high employee churn rate has been widely found in the software industry and the figure has reached 15% since 2010. This is a serious situation for the organization because it brings all kinds of financial burden to the company. If an employee leaves the organization, the team productivity will decrease during replacement which can cause the reduction in customer satisfaction and the delay in project release, leading to financial losses for software development companies. In order to minimize the negative impact on productivity, the onboarding support (also known as organizational socialization) was introduced as a mechanism to help newcomers adapt to the new working environment of the entire software development industry. For example, when a new employee was first hired, he/she would be informed of the work content of the position and the expectations of the company for him/her.

Demonstrating clear job characteristics and organizational expectations of individuals would stimulate the new employee's enthusiasm for work (Pike, 2014).

According to Bauer and Erdogan (2011), onboarding process is dedicated to helping new employees gain professional knowledge and skills quickly and smoothly in new organizations. It is designed to accelerate the integration of new employees into new teams, reduce the impact of new employees, and help new employees gain confidence and accept their own teams. Pike (2014) pointed out that organizational socialization also helps to retain employees with top performance and eliminate those who are not suitable for the organization, because new employees usually either integrate into the new team or leave.

Kumar, Wallace, and Young (2016) discussed about the importance of onboarding into the integration of newcomers. Onboarding process provides new employees with different ways to learn in a new work environment and help them become capable and confident development team members.

Johnson and Senge (2010) studied how to onboard new software engineers hired in Google to increase their productivity in development teams. Through the analysis of the data collected from semi-structured interviews, the results show that Google offers the most advanced onboarding programs and benchmarking qualities to enhance the team collaboration among new employees. In the study by Begel and Simon (2008), eight graduate developers newly hired in Microsoft were selected as research subjects to help identify the behavior of new members in a software development team. The survey results showed that recent university graduates generally have problems in poor communication skills and sociability. Begel and Simon (2008) indicated that using specific onboarding activities, such as pair programming, new employee orientation and mentoring, can solve these problems.

On the other hand, Begel and Hemphill (2011) explores the problems faced by newcomers if the onboarding support is not provided. The research aims to discover the challenges of the new virtual development team and it was found that new members of the team had significantly few chances to interact with their colleagues. Without the appropriate onboarding process, team members had poor coordination, reduced trust and conflict.

Casicio (2010) demonstrated the importance of onboarding process from the view of the organization. Actively providing effective onboarding process to new employees can reduce the employee churn rate. Making new employees feel confident about the organization and being willing to contribute to the development of the organization would enhance the stability of the organization. The survey from Laurano (2013) monitored that the return on investment of onboarding support is generally around 33%. In an analysis of large U.S. manufacturing companies, companies can get a return on onboarding support of about 20 to 30 percent. Hence onboarding support can also enhance corporate profitability.

Previous studies have shown the negative impact on team productivity and organizational development with inappropriate onboarding process provided, which proved the importance of onboarding process to new employees. The studies gave some effective activities that may affect the outcomes of new employee onboarding, providing the ideas for the onboarding in the context of agile software development teams.

2.3 Onboarding in the Context of Agile Software Development Teams

This research mainly focused to investigate the onboarding support using the background of agile software development teams. Agile development takes the evolution of users' needs as the core and adopts an iterative and incremental approach to software development (Collier, 2011). It is highly critical for an agile software development team to promote team collaboration and process adjustment in the project lifecycle. Regardless of technical skills, team members must be integrated into their team and have a high social responsibility to achieve team cohesion. Compared with other development methodologies, it is not only necessary to follow the rules of the development structure in agile development, but also to support the cooperative thinking between deployment teams (Papadopoulos, 2015). In addition, there are some artefacts introduced in agile development to keep the project up and running in each iteration, such as burn-down chart, product backlogs, etc. This development methodology also contains other features, like coding standards, test-driven development or behaviour-driven development, and daily construction (Vukicevic & Draskovic. 2012). However, it is quite complicated and difficult to adopt the method, due to the rigorous standards of agile development.

The way to deploy agile development methods in an organization has been examined in quite a few previous studies. Papadopoulos (2015) discovered the transition process of a global communications software and services company from traditional software development to agile software development. The results showed that it is quite hard for the organizations to adopt an agile framework for their development teams, especially for the large companies that have used the traditional development methodology since the beginning. Such companies need to carefully deploy changes in the process of adopting this methodology, so as to effectively avoid some common problems that may be occurred, such as the misunderstanding of agile mindset.

Almost all the previous researches on the deployment of agile software development methodologies are from the perspective of an organization or company. They focus on finding out the agile solutions that fit the entire team and organization based on a macroscopic perspective. However, it is also important to give the guidelines to fit Agile to the members in a development team.

According to Papadopoulos (2015), it is difficult to introduce agile methodologies into the software development team. For new employees in an agile team, onboarding is also a challenge because the goals of these two types of onboarding are the same, which both focus on adapting to a specific type of development framework. During the process of integrating agile into the software development team, newcomers must learn how to communicate with other team members, how to use the artefacts and tools in agile, as well as how to contribute to the team. To meet these needs, the personal efforts of new employees are not the only required component, but also support from the development teams. If newcomers in the agile team are not provided with the onboarding process, they will take a long time to catch up with the pace of the team or may not even achieve assimilation.

The study Yang (2017) has made a further investigation on the perception of practitioners for their onboarding under such circumstances. It discovered the situation of new employees, provided them and their teams with the suggestions about how to deal with the problems encountered throughout the process of onboarding. As referring to Begel and Simon (2008), if a recent graduate employee has just joined a development team, the onboarding process will be slightly different when compared to an employee who already has work experience. The new graduate employees are making a huge transition from study to work, so the teams have to help them deal with it as smoothly as possible. There are few studies refining the details of onboarding support to new graduate employees, so my thesis extends the research by Yang (2017) on the importance of onboarding support to new employees from the perception of students. It will be very novel and interesting to discover the expectations of students for the onboarding support in their next agile team development jobs and the comparison with the perception of practitioners in Yang (2017).

2.4 The Model of Onboarding Process in Previous Studies

Referring to Bauer & Erdogan, 2011, a summary process model of onboarding is presented. The model briefly describes the factors, adjustment and outcomes of the onboarding process.

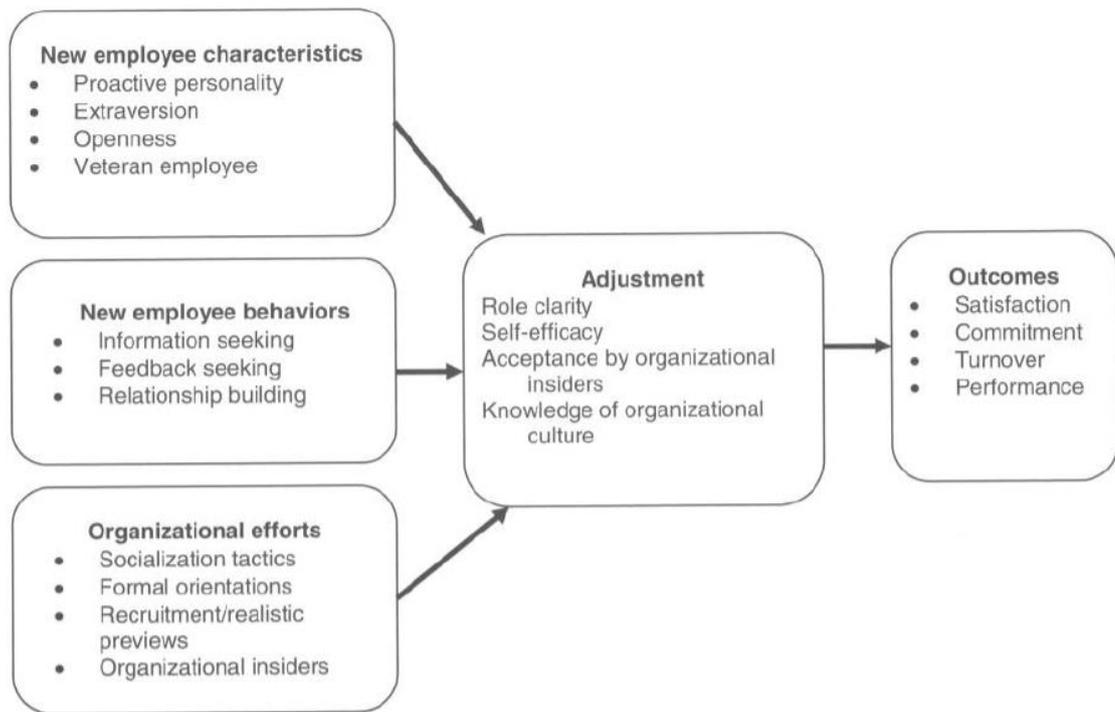


Figure 2-1 A summary process model of socialization (Bauer & Erdogan, 2011)

As seen in Figure 2-1, the onboarding process consists of three main parts: factors, adjustment and outcomes. According to Bauer & Erdogan, 2011, the factors were categorized into three classes: (1) new employee characteristics, (2) new employee behaviours, and (3) organizational efforts. New Employee characteristics can also be called individual differences between new employees in terms of their background and personality traits, which play an important role in onboarding. Furthermore, as participants in onboarding process, new employees' active participation in behaviours, like seeking knowledge or getting feedback from others, can benefit themselves to get integrated into the development team faster. Finally, organizations provide new employees with different onboarding activities, such as offering them orientation programs or assigning experienced mentors to them for regular meetings, which make a great contribution to organizational socialization.

2.4.1 New Employee Characteristics

The characteristics of new employees include proactive personality, Big Five personality traits and previous work experience of new employees (Bauer & Erdogan, 2011). This section defines that the characteristics of new employees can be an important factor influencing their onboarding, which provides an idea for me to investigate the impact of personality and previous work experience on the expectations of students for onboarding in this thesis.

The research from Saks & Ashforth (1996) has shown that new employees with certain personality traits and personal characteristics are able to quickly adapt to the organization. Among these personality traits, the most important one is proactive personality. Individuals with

proactive personalities tend to behave actively. The proactive personality of new employees has had an impact on their career, even before they enter the organization because proactive personality has been associated with a personal's job search success (Brown, Cober, Kane, Levy, & Shalhoop, 2006). Proactive employees desire to take charge of the environment so they like to engage in proactive behaviors to improve their sociability. For instance, their motivation to learn may translate into behavior that contributes to effective socialization, such as asking many clarification questions to help themselves better understand how the organization works (Major, Turner, & Fletcher, 2006). Thompson (2015) mentioned that proactive employees also focus on developing their social networks, which could benefit them to better understand the organizational culture. Studies have shown that proactive personality is associated with adjustment variables such as role clarity, task group integration, political knowledge and task mastery, and socialization outcomes (Kammever-mueller & Wanberg, 2003). For example, highly motivated employees tend to be more satisfied with their positions and careers (Erdo & Bauer, 2009). In addition, they tend to have higher performance levels (Crant, 2000). Finally, employees with higher initiative may be more likely to maintain a certain status due to their high sense of responsibility at work (Paerg, 1999), because of their greater self-efficacy and investment.

According to Kammever-mueller & Wanberg (2003), there is a relationship between Big Five personality traits and organizational socialization. Specifically, extroverts and employees who are open to experience show higher levels of adaption in their new jobs because their behaviours include seeking information and feedback, positively defining new situations as opportunities instead of threats and building strong relationships with others.

Finally, the adjustment process that experienced employees will experience will be slightly different. Employees with many job changes can use their previous work experience to help them adapt to the new organization. For example, when employees engage in their first regular job as recent graduates from institutions, their self-reported adjustments to teams and roles seem to indicate that it is more important for them to perform adequately than employees with more experience (Carr, Pearson, West, & Boyar, 2006). The meta-analysis from Bauer (2007) has also already proved that the self-efficacy of recent graduates was a stronger predictor of job performance and willingness to stay, while the relationship between social acceptance and job performance was stronger than that of experienced employees.

There is a significant body of research about the effects of new employee characteristics on their onboarding process. As Bauer (2007) provides strong evidence that the previous work experience of recent graduates also plays an important role in their onboarding process. However, only a small amount of literature has done in-depth research on employee onboarding process as new graduates. In my opinion, personality characteristics could have a certain impact on the effectiveness of their onboarding process when they join a new development team. In

order to confirm my idea, new employee characteristics is one of my research directions in this thesis.

2.4.2 New Employee Behaviours

Firstly, new employees are active participants in onboarding process. In other words, the organization's job is to provide an environment where new employees can adapt to their new positions and learn about the company's culture, new employees can also speed up their adaption by demonstrating behaviours to help them clarify what their expectations are, learn the values and norms of the organization and gain recognition from the team. More research needs to be done on behaviours that are conducive to integration, such as how new employees obtain new resources, negotiate their positions in a team, engage in political behaviour, and how these behaviours influence strategic adaption and onboarding outcomes.

Next, seeking information is a key behaviour for new employees which contributes to their adaption. New employees raise questions about different aspects of their work, company procedures and principles, and play an active role in familiarizing themselves with new environment. They can also use more passive methods to seek information, such as observing the surroundings, viewing websites about the company, looking over employee handbook and other written literature. However, limited information about company culture and other unwritten rules may arise from these passive methods. The key factor in understanding a new environment is to obtain information from supervisors and colleagues.

Certainly, the frequency of actively seeking information is associated with adaption of new employees, and their attitudes towards work and behaviours (Bauer, 2007; Morrison, 1993a; Morrison, 1993b). The patterns of seeking information from different sources, such as supervisors and colleagues that are not the same and can vary over time. For example, as employees' expertise increases, they would slowly reduce the technical information they seek from their colleagues. In addition, when employees start to integrate into the new environment, they will begin to ask the supervisor more about their expectations and how to evaluate them then (Chan & Schmit, 2000). Some employees may not be willing to ask questions because some ways of seeking information may generate social costs because they cast doubt on the future performance potential of employees and expose weaknesses. However, new employees can communicate with others in the organization who are interested in learning about specifications and performing well by asking questions about specifications, expectations, and how a task is accomplished in a particular company. Research has also shown that, to a greater extent, the socialized institutional approach to organization requires employees who do not seek information. In other words, even if an organization does not use a structured socialization

approach, employees may seek information to mitigate the negative effects of a lack of institutionalized socialization practices (Gruman, Saks, & Zweig, 2006).

Seeking feedback can also help new employees quicken their adaptations. New employees often make mistakes when they first get started, and may find it difficult to understand and interpret the positive or negative reactions they get from their colleagues. New employees lack an understanding of the unique context of the organization. For example, new employees may not know if their performance has met the standards, or whether it is a right thing to report company mistakes to their supervisor. By actively seeking feedback, new employees can quickly learn about which behaviours best fit the company's culture and expectations, and which do not. Wanberg & Kammeyer-Mueller (2000) has presented what benefits that feedback seeking can bring to new employee adaptations. Similar to information seeking, feedback seeking seems to be more helpful to employees in the absence of institutionalized socialization (Gruman, 2006). As more and more companies begin to set up formal onboarding programs, this significantly reduces the need for new employees to ask basic questions. These onboarding support include help desks that new employees can call, online information centres, and regular meetings with key organizational stakeholders to ensure that new employees are able to adapt to the organization.

Lastly, building relationships, also known as social networking, is the third important behaviour that new employees engage in, but not all new employees will show it. It is very important for new employees to promote their socialization by actively building relationships. According to Fisher (2005), 35% of managers who started new jobs found their new jobs quite challenging. Among these managers, within an average of 1.5 years, some were unable to endure frustration then chose to voluntarily leave, while some were fired by the organization. Of these, 60% of employees said that their inability to establish an effective relationship with colleagues caused their ultimate failure at work. New employees can actively build relationships by looking for opportunities to communicate with new colleagues, arranging informal time conversations like lunch or coffee breaks, participating in voluntary company functions more often, and putting more efforts into building relationships with their new supervisor. There is a high possibility that building relationships is potential to be one of the important antecedents of social outcomes such as performance and satisfaction (Ashford & Black, 1996; Bauer, Erdogan, Liden, & Wayne, 2006; Kim, Cable, & Kim, 2005; Wanberg & Kammeyer Mueller, 2000).

This section has clearly explained the benefits of seeking information, seeking feedback, and building relationship. However, the number of effective behaviours and activities is limited in previous studies and there is a gap on how the activities and behaviours of new employees affect the onboarding outcomes. Bauer and Erdogan (2011) also pointed out that more research is needed to find out what other behaviours contribute to the outcome of the onboarding process. Therefore, the main purpose of my thesis is to find out the expected activities that are

conducive to onboarding from the perception of students, building on the research of Yang (2017), and also how the activities affect the onboarding outcomes.

2.4.3 Organizational effort

Not only the characteristics and behaviours of new employees have played a significant role in onboarding, but the help from the organization will also have a profound impact on the outcomes of onboarding. Organizations usually provide onboarding programmes for new employees as support. Different organizations will use different ways to train and orient new employees. The differences between different organizations include their socialization strategies and formal onboarding programmes, the extent to which actual job previews for new employees, and the extent to which internal employees help or hinder the adaption process (Bauer & Erdogan, 2011).

Organizations are taking a more relaxed approach to employee socialization. Some organizations tend to use more structured and systematic approach to realize the socialization of new employees, and other organizations, the use of the "sink or swim" approach, the content of the new employees are trying to figure out the expected Van Maanen and Schein (1979) defines the social policy of six dimensions: (1) class action lawsuit individual socialization, (2) the formal or informal, (3) sequential or random training steps, (4) fixed or variable sequencing of training, (5) insider-assisted adjustment of continuous or discontinuous strategies, (6) authorization or dissection by dissection. New immigrants abandon their former selves.

Jones (1986) studied these strategies and a series of institutionalized and individualized strategies between them. His differences represent different social strategies used by companies. Companies that use institutionalized socialization strategies implement systematic step-by-step procedures for new employees, teaching them what their roles are, what the company's norms are, and how they ought to behave. New employees have experienced multiple initiation experiences as part of a cohort while being isolated from existing employees. The activities in which new employees participate are fixed and the timing of these activities is predetermined. New employees often get help with organizational role models from this type of system. Other companies generally use individualized socialization strategies. In these companies, new employees immediately begin to deal with their new positions and try to figure out the company's values, norms and recommendations in the onboarding process. In companies that use individualized socialization strategies, new employees are free to build their relationships and must play a more active role in understanding the company's expectations, while in companies that use institutionalized strategies, new employees learning and adaptations are carefully arranged. Examples of organizations using institutionalized socialization strategies include large public accounting firms, where new employees experience long orientation and

initiation activities as a cohort, and the military, where recruits experience extensive activities as part of a cohort.

Bauer (2007) and Saks, Uggerslev & Fasina (2007) have shown that employees who adopt institutionalized socialization strategies tend to have more positive work attitudes, higher fitness and lower turnover than those who adopt individualized strategies. For recent graduates, however, this positive effect was stronger than for employees changing jobs (Cable & Parsons, 2001; Saks, 2007), and employees who did not engage in positive behaviours (Kim et al., 2005). In addition, institutionalized socialization strategies may limit employees' creativity because employees are expected conform to the status quo, and individualized strategies may encourage employees to show their personality and values rather than integrate into the culture. In fact, studies have shown that institutionalized socialization is unrelated to role innovation (Ashforth & Saks, 1996), whereas individualized socialization strategies are associated with the adoption of a more innovative approach to an employee's responsibilities (Jones, 1986).

Regardless of the socialization strategy adopted by the organization, a formal onboarding program can help new employees understand the company culture and introduce them to new roles and colleagues. Onboarding program can help new employees feel welcome and provide them with information about how they can succeed in new jobs. Large organizations may have formal onboarding programs, including lectures, videotapes, and written materials, while other organizations may adopt more unusual methods. In a formal onboarding program, onboarding can last from a few hours to a few months. For shorter orientations, some companies use computer-based targeting and intranets to help support new employees and be consistent across different locations in the same company. Research shows that onboarding program helps employees understand the company's goals and history, as well as understand the company's power structure. These programs may also help with team integration (Klein & Weaver, 2000); however, one study suggests that these benefits may not achieve the same degree of computer-based orientation. Wesson and Gogus (2005) will participate in regular face-to-face orientation. In contrast to employees who participated in computer orientation, employees who participated in computer orientation were found to have a low understanding of the job and company. This suggests that different orientation formats may not be able to replace with each other. In general, an effective onboarding program is officially recorded and communicated to all members of the organization, continuously applied and tracked over time (Bauer & Elder, 2006).

Social events and other recruiting functions play a crucial role in finding the right employee-organizational fit. Recruitment activities can help new immigrants gather other information about what the real life within the organization is. Recruitment related activities can help new immigrants form realistic expectations and promote expected trading methods (Rynes, 1991). Thus, new hires' perceptions of the quality of recruitment practices are associated with

favourable social outcomes, such as organizational commitment (Caldwell, Chatman, & O'reilly, 1990).

Another organizational strategy to promote the socialization of new employees is providing a realistic preview of the work and company culture for employees. It seems to be an advantage to provide employees with the most accurate information possible before they start working for the company. By providing a true preview, companies can eliminate potential employees who are clearly unsuitable for the organization, thereby avoiding replacing them shortly after they are hired. In addition, realistic prior views may prevent new employees from experiencing unmet expectations. For example, an organization may have the impression that new employees will be able to make their own decisions about work and have a lot of autonomy. However, in the first few months, newcomers may find that the company is hierarchical in nature, and even few decisions require approval from the superior. This new employee may be frustrated by the lack of autonomy and his or her unsatisfied expectations. This discrepancy may weaken new employees' loyalty to the company and may result in employees exiting faster than expected. Conversely, if an employee finds this before joining the company, he or she may refuse to accept the job (in which case the company can find a more suitable employee) or better understand the work research shows that those received New employees who have a lot of accurate information about the company and new jobs tend to adjust better (Kammeyer-Mueller & Wanberg, 2003; Klein. Fan, & Preacher, 2006). Companies can provide real job previews during recruitment and recruitment, as well as through internships and other means. Online retailer Zappos uses an innovative technology, and if they don't want to continue, they can opt out of the organization after a week of training. This is a practical form of work preview that allows employees to make accurate judgments about the future in the organization.

An important finding of organizational socialization research is the impact of organization insiders on successful socialization (Chatman, 1991; Kammever-Mueller & Wanberg, 2003; Major, Koslowski, Chao, & Gardner. 1995; Ostroff & Kozlowski. 1993). There are many ways being used to help mentor newcomers, such as teaching new people about organizational knowledge, providing advice, helping to introduce work content and nature, and providing social support (TD Allen, Ebv, & Lentz, 2006). Mentors are also important because they can help answer questions that employees don't like to ask managers, and can provide support structures to help new employees adapt to the social and political environment. Ostroff and Kozlowski (1993) studied learning and found that newcomers who were mentored know their organization better than newcomers who were not mentored. The study found that if new employees participated in social activities and stayed with organizational mentors, they were more likely to learn and internalize the key values of organizational culture (Chatman. 1991). A research proposal for new faculty members, activities such as mentoring programs should be used to help new faculty members feel welcome and adapt to their new environment. Activities

such as mentoring programs provide opportunities for important interactions with colleagues and help provide enough information to help new employees adapt to the new work environment (Cawver & Friedrich, 1998). When introducing new members into an organization, it is important to recognize the importance of the mentor. Mentors can also help newcomers better manage their expectations and learning about the organization more effectively through its events and practices. In addition to mentoring, the organization climate should be relevant to the newcomers' adaptation, but more research is needed on this topic to help determine which climate is best for which type of newcomers

Organizational effort is considered as the third enabler in the onboarding process and it helps identify the effective onboarding activities used in current practice. But the relationship between the onboarding activities and outcomes has not been clearly indicated in previous studies. Hence this thesis extends the research of Yang (2017) to investigate the preferences for the importance of the onboarding activities used in current practice from the perception of students, as well as their expected onboarding goals of the onboarding activities.

2.4.4 New Employee Adjustment

New employee adjustment, also known as newcomer adaptation, refers to how new employees perform in the process of transitioning from an outsider to the inside of the organization. There are many potential adjustment factors that may indicate the success or failure of newcomers, but the research tends to focus on four key variables: role clarity, self-efficacy, acceptance within the organization, and other adjustments to organizational culture. Indicators are still important but rarely valued, including person-organization matching (Cable & Parsons, 2001; Cooper-Thomas, van Vianen, & Anderson, 2004; Kim, 2005) and person-work team matching (Kirchmeyer, 1995).

Role clarity is a good reflection of how well a new person adapts to the new job itself. When new employees understand the roles they should play, their roles become clearer. Role conflicts are also seen as a useful sign of new employee adjustments, with lower role conflicts associated with more positive social outcomes (Bauer, 2007; Kammeyer-Mueller & Wanberg, 2003; Saks, 2007). In fact, in the process of socialization, role clarity has become one of the most consistent predictors of job satisfaction and organizational commitment (Adkins, 1995).

Self-efficacy defines how confident employees are about their work. If a new employee feels he or she can master the work that is currently being done, this feeling should be associated with positive organizational and individual outcomes. Studies have shown that self-efficacy has a significant impact on socialization outcomes such as organizational commitment, satisfaction, and turnover (Bauer, 2007; Kammeyer-Mueller & Wanberg, 2003).

As we discussed that insiders are an important aspect of the learning process for newcomers, who can get information about the organization from these employees. Moreover, it is also important for newcomers to feel comfortable socially and be accepted by colleagues and superiors. Research often uses peer acceptance as an indicator of adaptation (Chao, O'Leary-Kelly, Wolf, Klein & Gardner, 1994). For instance, research shows that integrating into development teams is positively affecting some socialization outcomes, such as commitment and turnover (Kammever-Mueller & Wanberg, 2003). Therefore, good socialization outcomes can be generated by high-quality relationships with leaders and other team members (Major, 1995).

Understanding the culture of an organization and how it works is seen as another key aspect of employee socialization. Klein & Weaver (2000) has shown that understanding organizational politics, understanding organizational aims and values, and learning the organizational language all are important indicators of employee adjustment, which are then highly related to more distal outcomes, such as commitments, satisfactions and turnover.

These four adjustments help to measure the extent to which new recruits are integrated into the new company, but the onboarding goals are not clearly identified and explained. This thesis builds on the research of Yang (2017) to help determine the adjustments needed for new employees as recent graduates, and identify the expected onboarding goals from the perception of students.

2.5 Organizational Outcomes of Onboarding Support in Agile Development Teams

This section aims to analyse and summarize what outcomes of onboarding support that organizations expect for their new employees when a newcomer joins a new agile development team, in order for comparison with student expected outcomes of onboarding support that would be analysed in later chapters. All the organizational outcomes were obtained from the literature by analysing the characteristics and personality of new employees, and the difficulties they encountered within the onboarding process.

Newcomers who lack knowledge and a comprehensive understanding of their work and company information will bring lower levels of productivity and performance to the organization (Begel & Simon, 2008). In the software development industry, new employees often encounter problems related to technical skills, project knowledge, and socializing with colleagues. As effective outcomes of onboarding support, new employees are expected to have the ability to communicate and collaborate with other team members, and meet quality

standards. In addition, it is expected that new employees are able to master the framework for agile software development methods so that they can accomplish tasks independently.

The following Table 2-1 summarizes and analyses the organizational outcomes of onboarding support provided for new employees in agile software development teams, referred from Yang (2017). It helps define the onboarding goals of the onboarding activities from the perception of practitioners, which will be used for the comparison with the expected onboarding goals of students in this thesis.

Category	Element	Explanation	Reference
Culture Context	Understand company culture	Newcomers must understand the culture and values of their companies, as this gives them the concept of organizational broader goals so they can be integrated into the team as a whole.	(Stein & Christiansen, 2010) (Pike, 2014) (Singh, 2012) (Jensen, King, & Kuechler, 2011) (Steinmacher Wiese, & Gerosa, 2012)
	Understand the team norms	The correct contact network and team power structure can provide newcomers with resources to interact with team members.	(Symon & Cassell, 2012) (Seibermer, & Liden, 2001)
Job Responsibility	Understand others' expectations of one's own role's responsibility	Newcomers always find it difficult to grasp the direction of their work. Two reports show that the misunderstanding of job responsibilities will decrease the productivity.	(Steinmacher, Sliva, & Gerosa, 2014) (Bauer & Erdogan 2011)
	Know the responsibilities, expertise and authority of other team members.	New employees, particularly as recent graduates, usually don't ask questions in time, and also it's hard to find the	(Begel & Stmon, 2008) (Steinmacher I., Wiese, Conte Gerosa, & Redmiles, 2014) (Stein & Christiansen, 2010)

		right people to answer their questions.	(Seibert Kraimer, & Liden, 2001)
	Understand what work to do and when to do it	Encourage new team members to find the tasks they are going to do, rather than simply dealing with tasks assigned by others.	(Krogh, Spaeth, & Lakhani, 2003) Park & Jensen, 2009)
Work Standard	Understand how to code and test to the team's expectations	New employees in software development generally suffer from poor coding efficiency and poor test robustness due to lack of operational knowledge of the tools used by the company.	(Begel & Simon, 2008) (Cubranic, Murphy, & Booth, 2005)
	Understand and meet the quality standard of work	As a new employee, the understanding of work standards should be broader than coding and testing. For example, the quality level of documentation and the quality of participation.	(Yang, 2017)
Agile Methodology	Adopt the mindset of Agile	Having a healthy mindset among team members is beneficial to the team collaboration and performance. Newcomers need to adapt to the way the agile team thinks.	(Hoek, Harrison, & Christopher, 2001) (Shore & Warden, 2010)
	Know how to use agile artefacts and techniques that are apart of the team's software development process	In order to improve the performance of newcomers, they need to understand and master all the artefacts and	(Ruping, 2003) (Shore & Warden, 2010)

		technologies used in the project.	
Project Knowledge	Understand the structure, aim and implication of the project	If the newcomer lacks an understanding of the overall structure of the system, it will lead to a misunderstanding of the project objective, which is closely associated with their performance.	(Steinmacher Wiese, & Gerosa, 2012)
	Understand the project domain knowledge and terminology	If newcomers cannot be well familiar with the professional domain knowledge, it will have a negative impact on their performance.	(Oliveira, Rocha, Travassos, & Menezes, 1999) (Steinnacher, Sliva, & Gerosa, 2014)

Table 2-1 Summary of the organizational outcomes from synthesis of literature abstracted from Yang (2017)

As the main aim of this study is to discover the expectations for onboarding support from the perception of students and their expected onboarding goals, the organizational outcomes will not be furthered explained.

2.6 The Model of Onboarding Process in Yang (2017)

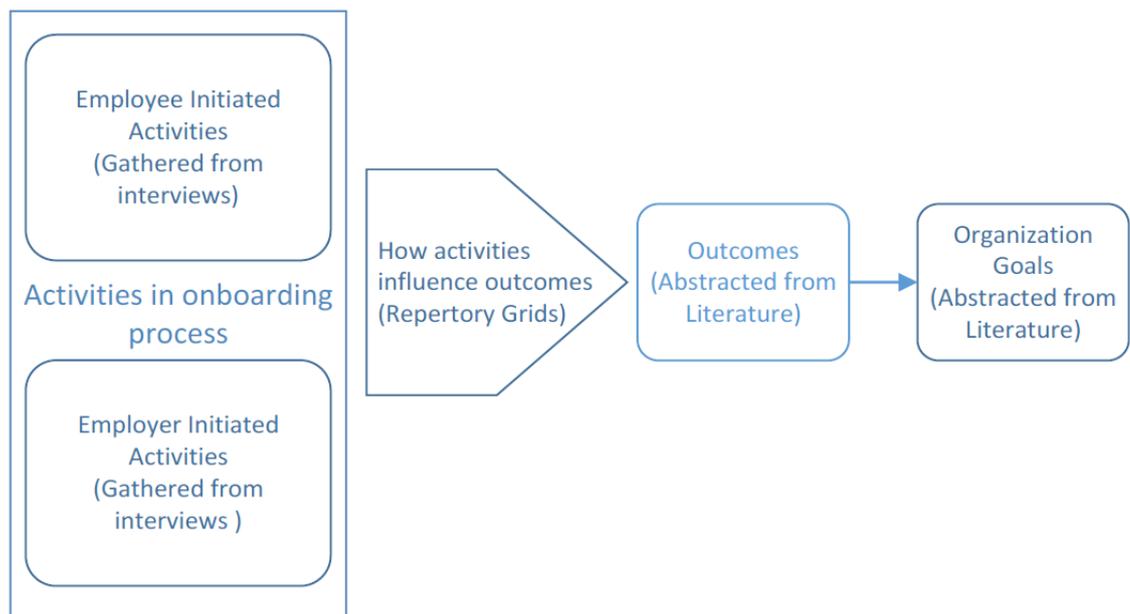


Figure 2-2 The model of onboarding process in Yang (2017)

Figure 2-2 conceptualizes the onboarding process in previous study by Yang (2017). It focuses on understanding the specific onboarding activities that are actually used and the expected outcomes of the onboarding process. The onboarding activities are divided into employee-initiated ones and employer-initiated ones, and both practitioners and employers gave 28 distinct onboarding activities in Yang (2017). There are 12 of 28 onboarding activities adopted in this thesis to help investigate the expectations of students for onboarding support and their expected onboarding goals. As the aim of my study is to compare the perception of students for onboarding support with the perception of practitioners in Yang (2017), the outcomes and organization goals shown in Figure 2-2 are used to represent the perception of practitioners for onboarding support.

3 Research Design and Implementation

This chapter indicates what and how the research methodologies are implemented in this study and describes each step involved to conduct this research. It also explains what type of data is collected from the research methodologies, and how the data is collected and analysed to answer the research questions.

3.1 Research Aim and Questions

The primary purpose of this study is to understand what onboarding activities used in practice students expect, and the difference between student expectations and industry expectations of onboarding support in the context of agile development teams, with a view to reveal possible improvements to onboarding in current market. In this study, the onboarding support was conceptualized as a set of activities that help new team members increase their productivity and integrate into a new work environment. There were 12 onboarding activities selected from the previous study Yang (2017), shown in Table 3-1.

A1	Have a mentor assigned to you for regular meetings
A2	Have online resources like Stackoverflow to look up technical information and ask questions readily available
A3	Be assigned some simple tasks at the start of your job, to ease you in to it
A4	Team members are willing to answer your questions about the work
A5	Team spends some time together socialising
A6	Get some training sessions related to your work with the team
A7	Have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)
A8	Have access to a shared code repository containing your team's code
A9	Be involved in pair programming in your work
A10	Have daily stand up meetings with your team
A11	The company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues
A12	Be given time to self-learn from books and online tutorials

Table 3-1 Onboarding activities provided for students

As these 12 onboarding activities were the top 12 most frequently offered by the organizations and also made the most contribution to the practitioners' development in the teams. It is also convenient for me to compare the findings obtained from student expectations for these 12 onboarding activities with the findings in Yang (2017). Understanding the relationship between onboarding activities and expected onboarding goals of onboarding, as part of the research objective, can provide guidelines for agile software development teams and new employees, which is conducive to productivity and integration. The research questions in the context of a new team member joining an agile software development team as a recent graduate are as follows:

- RQ1: What are the main expectations that students have about how they will be supported (i.e. onboarding techniques) to onboard onto a team in their next software development job.
- RQ1A: How do the expectations of students compare for students with previous team development experience?
- RQ2: What are the students' perceptions of the levels of contribution of different onboarding techniques to achieving different onboarding goals?
- RQ3: How do expectations of students compare with the team onboarding techniques and goals identified by practitioners?

The first question RQ1 gives some insights into the nature of student expectations of onboarding support and the priority of onboarding activities preferred by students. I can broadly explore students' preferences and expectations for onboarding support through the gathering of the answers to the open questions in online surveys.

The purpose of RQ1A is to reveal the preferences for students with previous relevant work experience towards onboarding support. I can also compare the preferences for students with expectations and with previous team development experience to see if there is any difference or similarity from the expected onboarding support of students. The reasons for the difference or similarity can be obtained from the expected onboarding goals of each onboarding activity identified from interviews, which is the answer to RQ2.

RQ2 aims to investigate how students think about each of top 12 onboarding activities identified in Yang (2017). Through the conversations of the interviews with students, I can find out why students expected to have each onboarding activity and what expected onboarding outcomes they desired to have. It can also provide some ideas about Through in-depth analysis of student expected onboarding goals of each onboarding activity, I can explore the reasons for the

differences or similarities between students' expectations, which can also be applied to explain the differences or similarities found in RQ1A.

The comparison from RQ3 cannot only show the difference between students' expectations of onboarding support and those of the practitioners, but also help the organizations think about the students' needs for onboarding in a lateral way when they join the agile development teams as new employees. Only in this way can the organizations provide appropriate onboarding support for recent graduates to maximize onboarding and thereby promoting their integration into the new teams.

3.2 Literature Review

The literature review is the first step in starting this research. This includes reading, documenting, and analysing articles and theories related to the newcomer onboarding process and agile software development methods. The focus of this phase is to define the meaning and importance of the new employee onboarding process, to understand the current status of the new employee onboarding process in the agile software development teams, as well as to identify factors that influence the onboarding process. Based on previous studies, the onboarding process is considered as an important factor affecting the performance of newcomers and their teams (Bauer & Erdogan, 2011; Pike, 2014; Bradt & Vonnegut, 2009). It reduces the time that new employees need to integrate into a new work environment, increases the productivity of the entire development team, and improves job satisfaction and organizational commitment. The main purpose of the literature review is to provide a theoretical basis for this research, and help build a research framework, thereby gaining an in-depth understanding of the onboarding in an agile software development team. The findings of the review were used to conduct the online survey questions and establish the basic resources of semi-structured interview questions. It is an indispensable method for answering research questions.

Previous research in the field of onboarding process in software development industry has raised the importance of this process, and the technologies and strategies during the onboarding process. According to the research of Bradt and Vonnegut (2009) and Begel and Simon (2008), the appropriate onboarding process was confirmed to be the key to improving the productivity of new employees in a relatively short period of time. Bauer and Erdogan (2011) argued that the proactive behaviours of new employees like information seeking, organizational efforts can be an appropriate approach to accelerate the integration of new employees into a new work environment.

However, quite a few studies focused on the onboarding process of newcomers in the area of traditional software development, like waterfalls and open source methodology instead of agile

methodology. For example, Steinmacher and Gerosa (2014) used systematic literature review methods to aggregate the obstacles faced by newcomers in open source projects, and hence 21 studies were analysed to support their findings. Their research also categorized the obstacles faced by new employees into 5 types during the onboarding process: finding a way to start, social interactions, coding issues, documentation issues, and the knowledge of new employees. While they were not able to present an effective way to solve these problems.

Moreover, most of previous studies simply explored and improved the onboarding support for new employees from the perspective of organizational benefits, thereby ignoring the expectations of new employees themselves. Jones (1986) discussed about several negative effects if an organization provides inappropriate onboarding support for their new employees. Traditional onboarding support tends to be the focus of an organization, but if the onboarding support provided by the organization is over traditional, the onboarding support will lack flexibility which then causes project managers' lack of profound understanding of the onboarding characteristics and rules, and they will also fail to combine with the personal development of new employees. Ignoring the personal development needs of new employees makes the onboarding effectiveness of new employees counterproductive. In addition, many new employees will easily forget the onboarding content or lack the practical application opportunities even if they have been through the onboarding program. The other new employees are not motivated to apply the skills learnt from the onboarding program to the real work, due to the lack of support from their colleagues and supervisors. This can seriously reduce the effectiveness of onboarding outcomes for new employees.

Begel and Simon (2008) conducted on-site qualitative case studies of new software developers from a company. They found that many of the difficulties faced by recent graduates, who were just engaged in software development, were due to poor communication and social skills. They also found that using specific onboarding activities, such as pair programming, new employee orientation and mentoring, may be more effective in helping recent graduates become qualified software developers in the organization. Their research did not include the background of the development methodology, nor did it clearly articulate the link between effective onboarding methods and onboarding outcomes. In addition, because of the particularity of agile and its strict rules, the onboarding process may be more complicated and difficult than other development methods in such a development environment. Therefore, the contribution of this study is significant because it defined the effective activities required by new employees in the agile software development team during the onboarding process and explained how these activities affect the outcomes of the onboarding process.

3.2.1 Implementation of literature review

The basic definition and meaning of the onboarding process were derived from the literature review in the early stages of this study. These theories outline the significance and importance of the onboarding process to individuals and organizations (Abdel-Hamild, 1989; Ashforth and Sax, 1996, Bauer and Erdogan, 2011: Bauer, Bodner, El Doan, Tenusillo and Tucker, 2007). In addition, based on previous research findings (Bauer & Erdogan, 2011; Begel & Simon, 2008; Erdogan Begel &, 2011; Steinmacher & Gerosé, 2014), the current status of new recruits in the software development industry has been shown, which laid the foundation for my research. The challenges faced by new employees, individual and organizational efforts, and the organizational expectations of new employees were all obtained from the literature to support the implementation of online surveys and semi-structured interviews.

3.3 Online Survey

The software used for online survey in my study was Qualtrics, which is licensed by Auckland University of Technology. In order to invite students who majored in software development or other similar programmes from different institutions, I posted invitation announcements on the learning platforms of different institutions like Blackboard or Canvas, with the help of lecturers from different institutions. I also personally gave a presentation in a few software development lectures in AUT to introduce my research and invite students to participate in my online surveys. The responses were gathered from the participants identified as students who majored in software development. According to statistics from online surveys, there were 160 students responding to the online surveys while only 58 students' responses were used as valid data for further analysis. These 58 students not only majored in software development but also provided relevant information for each question. The remaining 102 students either majored in something unrelated to software development, provided answers irrelevant to the questions, or leaved the blank answers. Therefore, the information provided by these 102 students were regarded as invalid data.

The online survey consists of six sections, combining open, closed and demographic questions. From the responses to the demographic questions, the participants involved in online surveys are 41 males and 17 females. 13 of these participants are from University of Auckland (UoA), 27 from Auckland University of Technology (AUT), and 18 from Victoria University of Wellington (VuW). In addition, 9 of the participants were first-year university students, 8 were second-year University students, 13 were third-year University students, 12 were fourth-year University students, and 16 were postgraduate students. However, the information collected from the demographic questions was beyond the scope of this research purpose so the data was not further analysed in this study.

The responses to open questions included student expected onboarding activities, resources and durations. During the process of collecting and analysing responses to open questions, I created a simple table in a word document and entered each response category identified, such as help from team members, be assigned a mentor, etc. As there were only 58 valid responses used for collection and analysis, I managed to record the individual response into the table and count the frequency of the repeated data manually. Then I organized the categories identified in the table by grouping because some respondents used different words to describe the same concept. At last, I calculated each identified category as a percentage of the 58 respondents so that the priority of the expected onboarding activities, resources and durations of students could be presented.

The closed questions required students to choose their preferences for each of 12 onboarding activities selected from Yang (2017). In order to enable students to more clearly and easily express their preferences for onboarding activities, the choices to the closed questions were set on a 5-point Likert Scale as *Extremely important*, *Very important*, *Moderately important*, *Slightly important* and *Not at all important*. Students could choose one of these five choices to indicate how important they think each onboarding activity would be for themselves to onboard as a new team member for their next industry agile software development job. Then I marked these preferences of each onboarding activity on a numeric scale of 5 to 1, from high to low correspondently. All the data was automatically recorded and statistically analysed by Qualtrics like standard deviation, variance. The overall score of each onboarding activity was calculated by myself based on the converted scale of each preference. The number of each preference for each onboarding activity was multiplied by the corresponding value of the converted scale, and then the scores of each preference were added up to get the overall score of students' preferences for each onboarding activity.

$$\begin{aligned} \text{Overall Score} &= 5 \times \mathbf{N}_{\text{Extremely important}} + 4 \times \mathbf{N}_{\text{Very important}} + 3 \times \mathbf{N}_{\text{Moderately important}} + 2 \\ &\times \mathbf{N}_{\text{Slightly important}} + 1 \times \mathbf{N}_{\text{Not at all important}} \\ &(\mathbf{N} \text{ represents the number of students' responses of each preference}) \end{aligned}$$

The open questions can help the participants freely express their expected onboarding support. Their answers to the open questions indicated a few onboarding activities that were different from the previous study Yang (2017), which extended the onboarding support from the perception of students. From the responses to the closed questions, students' preferences for the existing onboarding activities can be analysed to compare with the practitioners' preferences. Although the open questions and closed questions both raised similar questions, the outcomes

were different. The open questions were designed to obtain some new onboarding activities from the perception of students, while closed questions were mainly designed to compare the perception of students with the perception of practitioners in Yang (2017).

By analysing these 58 responses from online surveys, the priorities of the expected onboarding activities of students with expectations and with previous team development experience were both presented. In order to clearly see the differences and similarities of the expectations for onboarding activities between the expectations of students and the preferences of experienced students, a multiple line graph was made using SPSS. The further investigation and analysis about reasons for the difference and similarities could be obtained through a few literature reviews and semi-structured interviews afterwards.

3.3.1 Implementation of Online Survey

In order to investigate student expectations of onboarding support into existing agile software development teams as recent graduates, I need extensive data to ensure this study is representative. Thus, it is the best idea to adopt online survey, as a quantitative research method, in this research. Online survey ensures the anonymity, voluntariness and universality of students, and effectively controls the time for student to participant in this research.

Referring to Reja (2003), the use open questions allows respondents to express more information, such as feelings, attitudes and understanding of the topic. While closed questions may not provide respondents with choices that reflect their true feelings because of the simplicity and limitations of the answers. Open questions give respondents an opportunity to explain if they don't understand the question or have no opinions about it. In addition, open questions can give researchers more open information and unique insights into student expectations for onboarding support, because respondents may find that them less threatening than closed questions.

As the online survey was controlled to be around 15-minute-long to keep students interested, closed questions are easy and quick for students to answer and fewer irrelevant answers will be received. The data collected from closed questions are less costly to analyse than open questions and the answers of different students are easier to compare. It is also helpful and convenient for me to code and statistically analyse the answers to close questions, which improves the consistency and accuracy of the findings.

Therefore, the combination of open and closed questions doesn't only reasonably control the response time, but also achieves the expected effect of the use of online survey. The following table 3-2 indicates the relationship between online survey questions and research questions, and how the online survey questions can answer the research questions.

	Research Questions	Online Survey Questions
Context of Online Survey		<p>The question in online survey is based on the background where a new employee joins a new agile software development team as recent graduate.</p> <ol style="list-style-type: none"> 1. Please indicate your gender. 2. Please indicate the name of the institution at which you are studying. 3. What country is your institution in? 4. What year are you in at your institution? 5. What is your major for your qualification (e.g. software development, computer science)?
Onboarding Expectation	<p>What are the main expectations that students have about how they will be supported (i.e. onboarding techniques) to onboard onto a team in their next software development job?</p>	<ol style="list-style-type: none"> 6. When you start your next industry job, in what ways do you expect to get support from the organisation and team members to get onboarded? 7. When you start your next industry job, what resources do you think you will have available to you to help you with the onboarding process? 8. When you start your next industry job, how long do you think it will take to be onboarded to the team?
Onboarding Activity	<p>How do the expectations of students compare for students with previous team development experience?</p>	<ol style="list-style-type: none"> 9. The following set of statements are different activities that could support on-boarding. Please indicate how important you think each one would be for you to onboard as a new team member for your next industry software development job.

		<p>10. The following set of statements are different activities that were used to support on-boarding. Please indicate how important you think each one was for you to onboard as a new team member for your most recent industry software development job.</p>
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Table 3-2 Online survey questions related to research questions

3.4 Semi-structured Interview

The implementation of the literature review was to indicate what onboarding activities are normally provided for new employees by the organizations during the onboarding process, and the use of online surveys was to investigate student expected onboarding support and their preferences of each onboarding activity. While the purpose of adopting semi-structured interview in this study is to obtain information about the outcomes of each onboarding activity used within the onboarding process that student expected.

The interview consists of two parts, which are open questions about student expectations of onboarding and card sorting activity. When interviewees answered the open questions about their expectations of onboarding, some probing questions were asked to uncover their reasoning. While the use of card sorting activity aims to understand the reasoning behind different levels of importance for each of the pre-determined onboarding activities. So during the process of interview, the card sorting activity included a “think-out-loud” protocol, where the participant was asked to think out loud as they were sorting. Each onboarding activity was described on a single card, prepared prior to the interview and they were in a random order. There were 12 cards in total. Participants were asked to pick out the top 3, thinking out loud what they were thinking as they did that. They were then asked to pick out the top 3 from the remaining cards. They were finally asked to order each of cards left into order of importance to their rapid and successful onboarding, thinking out loud.

Table 3-3 indicates the relationship between interview questions and research questions, and how the interview questions can answer the research questions.

	Research Questions	Interview Questions
Context of interview		The question in the interview is based on the background where a new employee joins a new agile software development team as recent graduate.

		<ol style="list-style-type: none"> 1. What major are you currently studying? 2. Please indicate whether you have previous work experience in agile software development team or not.
New Employee Characteristic	What are the main expectations that students have about how they will be supported (i.e. onboarding techniques) to onboard onto a team in their next software development job?	<ol style="list-style-type: none"> 3. What abilities and personalities do you think you should have to start your next industry job in agile software development?
Onboarding Expectation	What are the main expectations that students have about how they will be supported (i.e. onboarding techniques) to onboard onto a team in their next software development job?	<ol style="list-style-type: none"> 4. In order to quickly integrate into a new agile development team, what onboarding support do you think will be helpful?
Onboarding Activity		<ol style="list-style-type: none"> 5. Could you please sort the following identified onboarding activities in Yang (2017), based on your preferences for the importance to your onboarding from high to low?
Onboarding Outcome	What are the students' perceptions of the levels of contribution of different onboarding techniques to achieving different onboarding goals?	<ol style="list-style-type: none"> 6. What outcomes do you expect for each of these onboarding activities to be for yourself? 7. Can you explain why you would like to sort these activity cards in this way?

Table 3-3 Interview questions related to research questions

As the research question in this study aims to make a further analysis and gain a deep understanding about new employee onboarding in the agile development team in real life, and most of new employees who join the agile development team are recent graduates in today's industry, it is very necessary to explore student expectations of onboarding support and their expected outcomes of the onboarding activities used in current agile development teams of the organizations. Sliverman (2013) argues that the interview method is widely used in qualitative research, and this approach is considered to be more effective than other methodologies to help gain a deeper understanding of social phenomena.

Brinkmann (2015) proves that interview is an appropriate method of data collection that can be adopted by researchers to analyse information from participants' experiences or expectations.

Hence, this research method is suitable for the study of onboarding because it allows participants to freely express their opinions in their own terms, which enriches the content of the conversation, helping researchers focus on in-depth investigation of the process and improving the accuracy of the raw data for subsequent steps. This method of data collection is particularly valuable for case studies of agile development because opinions, ideas, and perceptions can be obtained from interviews (Fitzgerald, Hartnett, & Conboy, 2006). Unlike the survey, the participants' thinking could be limited due to the formalized questions. Therefore, the purpose of the interview is to identify the participants' expectations, support the research subjects being investigated, and find answers to the research questions. With the information extracted from the conversation between the interviewer and the interviewee, we found the differences between the current onboarding support in the agile software industry and the onboarding support that students expect, as well as the possible causes of these differences.

Before finding the appropriate participants of semi-structured interviews, a paper that contained interview procedure and questions has been prepared in advance. I have then posted an invitation announcement onto the Blackboard, which is an important learning software recognized by Auckland University of Technology. I have also visited a few software development lectures in AUT to briefly introduce the topic of my research. After two months, only 10 students contacted me via email and Facebook page, and volunteered to be interviewed, which was a bit less than expected. Each participated student was given a participant information sheet and consent form before starting the interview. The students were able to decide whether or not to carry on the interview by referring to the information provided in the participant information sheet. If the students decided to keep on the interview, they would need to have their signatures signed on the consent form. Otherwise, they could immediately give up the interview. After obtaining the participant's consent, a formal interview was scheduled to match the availability of the student and the researcher. Each participant received a 30-minute interview and the conversation was electronically recorded. All interviews were proceeded by face-to-face communications, with only one participant presented in each interview.

During the conversation, the interviewees were encouraged to talk freely about their expectations about onboarding support when they join a new agile software development team as newcomers. Moreover, each interviewee was asked to take part in a card sort activity discussed above, which could help me gain a deeper understanding about student expected outcomes by investigating the reasoning behind different levels of importance for each of the pre-determined onboarding activities.

3.4.1 Interview Participants

As the research aimed to explore student expectations of onboarding support into existing agile development teams as recent graduates, each participant was identified from Auckland University of Technology as a student who are in your final year of study with a software development or relevant major, to make sure they had a basic understanding of onboarding support used in current agile software industry.

3.4.2 Implementation of Interview

Adopting semi-structured interviews in this study mainly aims to gain a deep understanding about student expected outcomes of the pre-determined onboarding activities, which provides evidence for the causes of the difference between students' and practitioners' perceptions of the onboarding activities.

It took approximately two months to complete all the interviews with every participant. The interviews were supposed to be finished within a month, but it was difficult to have enough students confirmed my interview invitations because the planned timeframe coincided with the student examination period. The interviews could only be carried out after the exam board was over, which made me have to extend the planned timeframe to two months.

Prior to the interview, the consent form was provided to the participants according to the AUT Ethics Committee's Guide for ethical research practice. The interviewees were told that the data collected from the interviews could not be used for purposes other than this study. To ensure the privacy of each participant, their names and other identification details were not used in any form of report including this study. They were also informed of the right to interrupt the interview at any time and to refuse the researcher to use their data. Once the participation was confirmed, the background and purpose of the interview were introduced to help the participants review the information of this study.

The content of semi-structured interview in this research was divided into two parts, the first part was open questions and the other part was a card sorting activity. The design of the first part aimed to freely express interviewees' opinions about their expectations of onboarding support when they join a new agile software development team. Unlike the open questions in the online survey, some probing questions could be asked to promote interviewees' deep thinking, which may discover more about student expectations of onboarding support than the data collected from the surveys. Even so, a few students were still unclear about their expectations of onboarding support used in current agile development teams. Therefore, the main purpose of the second part is to explain the reasoning behind different levels of importance for each of the pre-determined onboarding activities and help interviewees broaden their minds

on the other hand. Along with a deep guidance, a further investigation on interviewee expected onboarding goals of each pre-determined onboarding activity could be achieved.

The information collected from the open questions in semi-structured interviews was categorized and analysed manually. If there was some onboarding support that was different from the outcomes of the open questions in online surveys mentioned by the participants, the different ones would be added to the final research outcomes. For the results of the sorting activities in interviews, the way each participant sorted the cards was photographed so I could later compare the differences and analyse the reasons. The reasons stated by the participants were recorded in the form of quotes to ensure authenticity.

3.5 Ethical Consideration

The ethics approval application (EA1) was approved by the Auckland University of Technology ethics committee on 30/08/2018 with the reference number 18/345. Prior to the start of this study, all participants were provided with a participant information sheet and invited to email any questions to the researcher. Each participant signed a consent form that allowed the researcher to legally use the information obtained from the interviews of this study. Participants were guaranteed that they could withdraw from the study at any time prior to the completion of data collection, without having any disadvantages and taking any responsibilities. Each participant ought to sign two copies consent forms, as one of the copies was retained by the participant and the other one was kept in Auckland University of Technology.

3.6 The Model of Onboarding Expectations in This Research

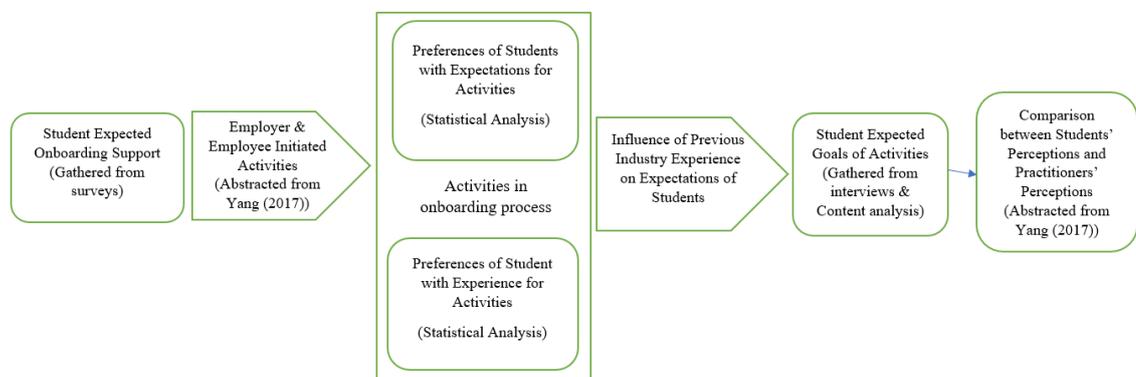


Figure 3–1 The model of onboarding expectations

Figure 3-1 briefly describes how the analysis of the expectations for onboarding support from the perception of students is processed in this research and the comparison with the perception of practitioners in previous study Yang (2017). This thesis focuses on finding out the specific onboarding activities used in practice that students are expecting and the expected goals of the onboarding activities from identified in Yang (2017) from the perception of students, as well as the comparison with practitioners' perceptions.

Student Expected Onboarding Support shown in Figure 3-1 consists of the expected onboarding activities, resources and durations of students, as well as the personal abilities/characteristics that students expect to have. *Employer & Employee Initiated Activities* represents the 12 of 28 onboarding activities discovered from Yang (2017). *Preferences of Students with Expectations for Activities* were defined as students' preferences for the importance of each of 12 onboarding activities to their onboarding in next team development job. *Preferences of Students with Experience for Activities* were defined as students' preferences for the importance of each of 12 onboarding activities to their onboarding in recent team development job. *Student Expected Goals of Activities* stand for what onboarding outcomes of each of 12 onboarding activities that students expect to be for themselves. *Students' Perceptions* represent the same definition as *Student Expected Onboarding Support*, and *Practitioners' Perceptions* represent the onboarding activities discovered in Yang (2017) and the organizational outcomes of the activities for practitioners during the onboarding process.

By comparing the perception of students with the perception of practitioners for onboarding support, there could be some different onboarding activities found from the ones in Yang (2017). In addition, different onboarding goals from the perception of students could be found in this thesis.

3.7 Research Process

Figure 3-2 is the research process of this thesis, which is used to explain each step of how the data was collected and analysed, and to find out the answer to each research question.

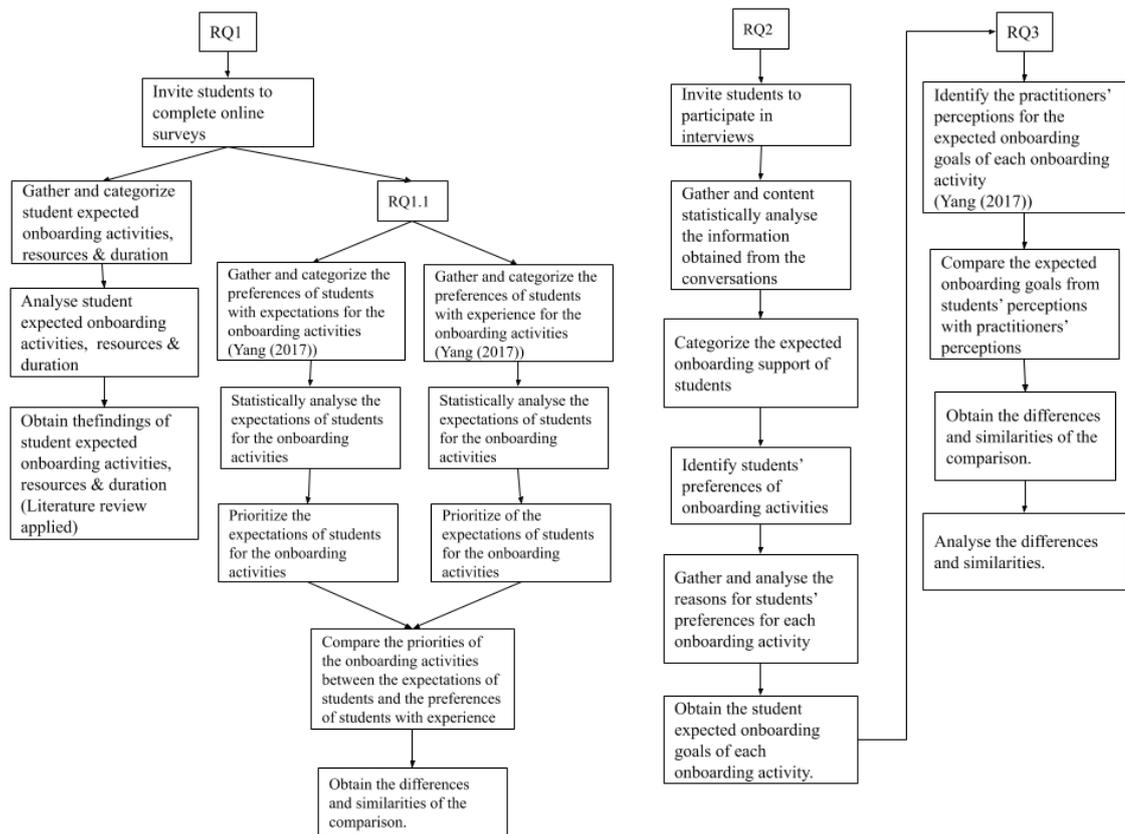


Figure 3–2 Research process

3.7.1 Answering RQ1

The data collected to answer RQ1 was gathered from students' responses to the open questions of online surveys. As RQ1 aims to investigate student expected onboarding activities, resources and durations when joining new agile development teams as recent graduates, the categories of onboarding activities, resources and durations that 58 students expected were firstly identified and I have entered each category into the tables created in a word document. Then I recorded the individual response into the tables one by one and counted the proportion of the same information manually. In addition, I organized the identified categories by grouping because some respondents may use different words to describe the same concept. At last, I calculated the frequency of each identified category as a percentage so that the priority of the expected onboarding activities, resources and durations of students could be shown to answer RQ1.

3.7.2 Answering RQ1A

The answer to RQ1A was obtained through the data analysis of students' responses to the closed questions in online survey. While the closed questions contained two different types of data, which were the preferences for the selected 12 onboarding activities of student with

expectations and with team development experience. Both types of data were automatically categorized and statistically analysed by Qualtrics but the overall score for each onboarding activity was calculated by myself based on the converted scores for each preference.

According to the statistics in Qualtrics, 24 students had software team development experience before, so the preferences of experienced students for the 12 onboarding activities were analysed from these 24 students' responses to the online surveys. The preferences of students with expectations for the 12 onboarding activities were analysed from all 58 students' responses to the online surveys. Although these participants included students with previous team development experience, their responses could still be used for analysis, as they could draw on the onboarding activities they had in their past team development jobs to indicate their expectations for the selected 12 onboarding activities in next team development job. For example, students may not be provided with a mentor in jobs before but they may expect to have a mentor assigned to them in next team development job.

Referring to Newman and Benz (1998), quantitative research focuses on quantitative statistical analysis, which is a kind of structural, deductive, predictive and explanatory research. The data obtained through quantitative research can be analysed with mature statistical software, such as MATLAB and SPSS, so the accuracy of the analysis will be higher and the results are more reliable. Quantitative research is able to make predictions based on statistics. Researchers can use statistical tests on data to generate descriptions and make predictions. Starting with basic statistics such as mean, mode, median, and standard deviation, a basic data framework (MRC) can be established and then more complex calculations such as T-test, Anova, and multiple regression calculations can be performed. At the same time, whether the results can be more widely generalized depends on the P-test used to determine the statistical validity of the data.

Therefore, in order to make sure the priorities of the expectations of students and the experienced students' preferences obtained through the data analysis of the closed questions in online surveys were accurate, it was not enough to compare the overall scores of all 12 onboarding activities. I have also made analysis and comparison on the standard deviation and variance of each onboarding activity, as well as the percentage of each preference. All these statistical data were provided by Qualtrics.

- **Standard deviation**

The standard deviation describes the average of the deviations from the mean. It is the square root of the average of sums of squared deviations, which can be represented as σ . The standard deviation is also the arithmetic square root of the variance. Standard deviation is used to measure the dispersion of a data set, where the smaller the standard deviation is, the less the values deviate from the mean, and vice versa. The magnitude of the standard deviation can be

measured by the multiplier relationship between the standard deviation and the mean. Two data sets with the same mean may not have the same standard deviation (Klein, 2015).

- **Variance**

In probability theory and statistics, variance is the expectation of the squared deviation of a random variable from its mean. Informally, it measures how far a set of (random) numbers are spread out from their average value. Variance has a central role in statistics, where some ideas that use it include descriptive statistics, statistical inference, hypothesis testing, goodness of fit, and Monte Carlo sampling. Variance is an important tool in the sciences, where statistical analysis of data is common. The variance is the square of the standard deviation, the second central moment of a distribution, and the covariance of the random variable with itself, and it is often represented by s^2 or σ^2 (Hallak, 2016).

As RQ2 aimed to compare the preferences of students with expectations and with previous team development experience for the 12 onboarding activities, SPSS was used to create two bar chart graphs to indicate the priorities of 12 onboarding activities and a simple table created to combine the findings to help identify the differences or similarities. The reasons for the differences and similarities could be explained by the answer to RQ2.

3.7.3 Answering RQ2

The main purpose of RQ2 is to deeply investigate student expected onboarding goals of each of top 12 onboarding activities identified in Yang (2017) and the answer to RQ2 was obtained through the conversations in semi-structured interviews with 10 students.

As the semi-structured interview has two-way communication, effectively avoiding the shortcomings of a single method. During semi-structured interviews, interviewers are allowed to freely express their opinions in their own terms. The interviewer can get richer, more complete and more in-depth information than in the single method, and the interview can combine the structure and flexibility of the content to produce reliable, comparable qualitative data (Patton, 1999). Therefore, semi-structured interview is the best approach for further investigation about the expected onboarding goals of students.

In the beginning, the students were asked to answer a few open questions about their expectations for onboarding activities, resources and durations when they started next agile software development team jobs. Unlike the open questions in the online survey, some probing questions were asked to promote students' deep thinking during the conversation, which could discover more about the expectations of students for onboarding support than the information gathered from the online surveys. If the students were still a bit unsure of their expectations for onboarding support, the card sorting activity would then be introduced to them. Students could

feel free to explain the reasons for their preferences for the way they prioritized the onboarding activities during the process of sorting the cards. I could find out the expected onboarding goals of students for each onboarding activity from these reasons to answer RQ3 through the content analysis.

3.7.4 Answering RQ3

As this study aims to extend the previous study Yang (2017) to investigate the expectations for onboarding support in agile development teams from the perception of students, RQ3 is to investigate the differences and similarities between students' and practitioners' perceptions of their expectations for the identified 12 onboarding activities. To answer RQ3, I compared the priority of students' preferences for the 12 onboarding activities with the practitioners' preferences in Yang (2017), and compared the students' expected onboarding goals of each onboarding activity with the practitioners' onboarding goals. By comparing the priority of the selected 12 onboarding activities, I could simply see the differences and similarities between students' and practitioners' perceptions for the onboarding activities used in practice. Then I have compared the top five onboarding activities from the practitioners' perceptions with the students' perceptions, to deeply explore the reasons for the differences and similarities through the analysis of their expected onboarding goals.

4 Findings and Discussion

This chapter identifies the findings obtained through the analysis of the data collected from the research methodologies in study, which answers the research questions. It compares the findings discovered in this study with the findings of Yang (2017), as well as explains the possible reasons of the differences. The implications of the findings are also discussed about at the end of this chapter.

4.1 Results of Online Surveys

There were 160 students involved in online surveys but only 58 students' responses were valid enough for analysis. Referring to the information gathered from those 58 students' responses, I have conducted an in-depth exploration and analysis on the expected onboarding activities, resources and durations of students, as well as the preferences for the existing onboarding activities of students with expectations and with team development experience.

4.1.1 Expected onboarding activities of students

The following Table 4-1 listed the specific onboarding activities that students expected to have for onboarding. The arranged order of the elements in both tables is based on how often they were mentioned in the 58 students' responses, from high to low.

Onboarding Activity	Proportion
Help from team members	57%
Help from training session/workshop	40%
Be assigned a mentor	38%
Access to all documentations on previous projects	35%
Introduction and explanation about the organization	31%
Introduction to/about team members and leaders	17%
Introduction about my role and essential skills related to my position	16%
Help from supportive supervisors	14%
Help from daily stand-up meeting	12%
Help from friendly work environment	10%
Help from team socialising	9%
Given help to familiarise with new work environment	5%

Be assigned simple tasks at the start	3%
Given sufficient time to learn skills	3%
Pair programming	3%
Be offered a dedicated graduate programme	2%

Table 4-1 Onboarding activities expected by students

Through the findings of the onboarding activities listed above, I have noticed the top three onboarding activities that students mentioned the most were *help from team members, help from training session/workshop* and *be assigned a mentor* can be seen as guided onboarding support. *Be assigned simple tasks at the start* and *be offered a dedicated graduate programme* were also mentioned in students' responses, but these two onboarding activities can be regarded as extraditing onboarding support. However, based on the proportions of students' responses, students preferred to receive guided onboarding support, rather than extraditing onboarding support.

Moreover, there are quite a few onboarding activities different from the findings in Yang (2017).

- **Introduction to/about team members and leaders**

The core of an agile development team is to maintain the spirit of team collaboration and also to have flexibility and continuous innovation. To achieve better team collaboration, team members are required to rely on each other, correlate with each other and cooperate together, so as to establish a cooperative team to solve all kinds of complex problems occurred at work.

Therefore, knowing each other by introducing new employees to/about team members and leaders can help new employees well understand what work each member is working on, what their responsibilities are, and what the organizations expect of them. In this way, team members are able to discuss and make decisions collectively, as well as efficiently share information and strengthen standards. This helps new employees quickly integrate themselves into the agile development team, which thereby improving the tacit understanding among members and the productivity of the whole team (Klein, 2012).

- **Introduction about my role and essential skills related to my position**

When new employees join a new development team, they will not be familiar with the content of their jobs and what skills related to the work are needed. A detailed introduction about the role and essentials skills related to their positions can help new employees clearly realize what they are supposed to do and how they should accomplish a task. According to different positions, new employees are able to learn the essentials skills related to their work from the training sessions/workshop (Stein, 2010).

There were some other onboarding activities that were repeatedly mentioned in students' responses and different from those found in Yang (2017), particularly (1) *Help from supportive supervisors*, (2) *Help from friendly work environment*, (3) *Given help to familiarise with new work environment*. All these onboarding activities together present a common point that students were looking forward to having a comfortable and respectful work environment.

- **Comfortable and respectful work environment**

In the online surveys, students said that having a supportive supervisor enabled them to be courage to ask questions and make progress through mistakes at work. More encouragement and communication from supportive supervisors reduced their stress in the beginning and made them feel respected. Less pressure and more respect from team members could make students proactive in work, which could then effectively integrate themselves into the new agile development team.

Kwak and Stoddard (2004) explained that for new recruits who have just come to an agile development team, the working environment largely affects the enthusiasm of them and whether they can quickly integrate into the team. Of course, this is true not only for new employees, but also for other team members. A friendly work environment can make employees have more enthusiasm and continuous working motivation, and make them devote themselves to the work more wholeheartedly. At the same time, it is also conducive to more emanating thinking of new employees. On the contrary, if the work environment is bad, new employees will lose enthusiasm and confidence in their jobs, which may negatively affect the job stability of new employees and reduce their proactivity.

Compared to the onboarding activities of practitioners' perceptions from Yang (2017), students had some different expectations for onboarding activities. They expected to have a good understanding of team members and their own work, as well as paid much attention to the work environment of the new agile development teams. The findings in this section were supported to answer the research question RQ1 and also added some new onboarding practices to Yang (2017) from the perception of students.

4.1.2 Expected onboarding resources of students

Resource	Proportion
Online learning resources	19%
Physical materials (e.g. Laptop)	12%

Knowledge and experience sharing	10%
Employee guidelines	9%
A certain orientation	7%
Introduction about tech stack	5%
Personal ability/experience	5%
Team members' attitude	5%
The way of team collaboration	5%
A list of contacts and people to get in touch with for help	3%
Social network	2%
Floor map	2%

Table 4-2 Resources expected by students

Table 4-2 indicated the resources that students find helpful to integrate into their next agile development jobs, in addition to the expected onboarding activities. However, some information gathered from the students' responses was duplicated with the onboarding activities shown in Table 4-2. In order to facilitate the following analysis, the table 4-2 was presented after carefully screening.

From the table, *online learning resources* was mentioned in 19% of students' responses to the online surveys and it was the most anticipated resource of students during the onboarding process.

- **Online learning resources**

In today's developed network era, the internet and education are the source power of social economic and cultural development. Online learning allows new or other employees in organizations to acquire diversified professional knowledge from their computers. According to Depura, 2012, the number of people who are learning through the network in the United States is growing at an annual rate of more than 30%, more than 60% of software development organizations are using the approach of online learning to conduct new employee onboarding and continuous education. The onboarding method of online learning takes the computer and Internet technology as the means of implementation, relying on the interactive environment created by the virtue of stand-alone, local area network or the Internet. With no need for face-to-face teaching, the onboarding purpose can be easily achieved. In the online learning environment, a large number of data, archives, teaching software, interest discussion and other resources are collected, and these resources are shared among employees. Online learning resources aims to train new employees to update their concepts technically, so as to fully reflect personalized learning, change new employees' cognitive process, reduce onboarding costs and adapt to knowledge changes. Providing online learning resources can not only expand the skills

of new employees, but also can quickly and effectively make the organization into a learning organization, so that new employees become learning employees.

It is not difficult for recent graduates to become a learning employee when joining a new agile software development team as the learning ability has been a strength for them after many years' education of formal institutions. New employees, as recent graduates, can develop their interest in the job and improve their relevant skills through continuous online learning, which helps them quickly and effectively integrated into a new agile development team.

There were some other onboarding resources mentioned frequently in online surveys, such as (1) *Physical materials (e.g. Laptop)*, (2) *Knowledge and experience sharing* and (3) *Employee guidelines*. Among them, *Physical materials (e.g. Laptop)* is a distinctive onboarding resource appeared in 12% of students' responses, so I would like to explore its importance for new employee onboarding.

- **Physical materials (e.g. Laptop)**

In the responses of online surveys, students expected to have a laptop, fast Wi-Fi, smartphone or a coffee machine. These answers may seem quite funny, but actually they indirectly indicate the students' expectation of a comfortable office environment.

The office has always been seen as an essential work facility. The rent of the office and various office facilities are classified as fixed assets by the financial department and become part of the advance and daily investment of the organization. As technology advances, the office transforms from a single workplace to a place focusing on "work lifestyle" and employee health, and also the office environment has become an important factor for enterprises that influences employee performance and productivity (Kamarulzaman, 2011).

Even with the proliferation of mobile devices, Haynes, 2008 still found that most organizations provided their employees with only stationary technology equipment. For instance, the use of landline telephones and desktop computers was more than 80 percent. Indeed, when employees spend a lot of time at their desks, they are more likely to choose stationary technology equipment. While mobile devices are more appropriate for team collaboration, interaction and information sharing. Given the different ways of working, the companies should think about how to make the best use of their office space and technology strategy to improve employee engagement, especially when new employees join the development teams.

As is well-known, Google LLC, as world's best technology company, set up a Coffee shop in mountain view park, California, called Coffee Lab. The decor is reminiscent of Starbucks, which also has warm wooden floors, comfortable soft chairs, a chalkboard displaying daily recommendations and a constant music. The establishment of the Coffee Lab is a sign of how

organizations are working to improve the office environment so that new employees can feel as comfortable as at home (Routledge, 1996).

For some small and medium-sized software development organizations, in order to help new employees' integration, new employees can be equipped with all necessary portable high-tech office tools and encouraged to work in other places other than the fixed office place, such as beside the residence or coffee shop. The organizations can also set up some leisure facilities inside the building, such as a bookshop and coffee room. This can give new employees the flexibility and freedom they need, and provide them with telecommuting terminals that can only be used in the office, thereby creating opportunities for cooperation and necessary communication between new employees and other team members (Graybill, 2013).

For new employees, a good office environment will make them feel cared about by the teams. Moreover, the office environment and facilities coordinated with the work of new employees can accelerate the integration of new employees into the new work team and thus improve their contribution to the team.

This section investigates the resources that student expected to be helpful for their onboarding. The resources are considered as another type of onboarding support to answer RQ1, which can also be added to the previous study Yang (2017) from the perceptions of students.

4.1.3 Expected onboarding durations of students

Onboarding Duration	Proportion
1-2 weeks	22%
2-3 weeks	28%
1-2 months	33%
2-3 months	14%
3-4 months	3%
Over 4 months	2%
Depend on the type of the work	16%
Depend on how much experience had	9%
2 weeks standard on-boarding process, 1-2 months being able to usefully contribute to the team	3%
1-2 weeks standard on-boarding process, 3 months being able to usefully contribute to the team	3%

Table 4-3 Expected onboarding durations of students

The table 4-3 indicated the durations that students think they may take to be onboarded to a new agile development team. 1 to 2 months were mentioned in 33% of students' responses gathered from online surveys, which means most of students expected to be onboarded within 1 to 2 months. And also, nearly all the students expected to be onboarded within 1 week to 2 months.

While the practitioners in Yang (2017) indicated that they normally took two months or more to fully understand their new jobs and new work environments. This is a significant difference between the onboarding durations from students' perceptions and practitioners' perceptions. Hence, this section finds out the expected onboarding durations of students for onboarding, so as to help the current agile development teams set appropriate expectations for new graduate employees based on the perceptions of practitioners. The findings can be supported to answer RQ1.

4.1.4 Student expectations for onboarding activities

In order for the onboarding activities to be coded into SPSS to create the bar chart graphs, I have assigned a memorable number and title to each of 12 onboarding activities, which was indicated in Table 4-4.

Activity	Title	Definition
A1	Mentoring	Have a mentor assigned to you for regular meetings
A2	Online Resources	Have online resources like Stackoverflow to look up technical information and ask questions readily available
A3	Simple Tasks	Be assigned some simple tasks at the start of your job, to ease you in to it
A4	Answer Questions	Team members are willing to answer your questions about the work
A5	Socializing	Team spends some time together socialising
A6	Training Sessions	Get some training sessions related to your work with the team
A7	Internal Documentation	Have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)
A8	Code Repository	Have access to a shared code repository containing your team's code
A9	Pair Programming	Be involved in pair programming in your work
A10	Stand-up Meeting	Have daily stand up meetings with your team

A11	Induction Programme	The company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues
A12	Self-Learning	Be given time to self-learn from books and online tutorials

Table 4-4 Titles of onboarding activities

According to the quantitative statistics provided by Qualtrics, the number of students' preferences for each onboarding activity was calculated. Combined with the use of 5-point Likert scale, *Extremely important* scored 5, *Very important* scored 4, *Moderately important* scored 3, *Slightly important* scored 2, and *Not at all important* scored 1, the overall score of students' preferences for each onboarding activity was calculated. The number of the preferences of students with expectations for each onboarding activity is shown in Appendix 2.

By applying 5-point Likert scale, the overall score of each onboarding activity was input into SPSS and a bar chart diagram was generated automatically. I have defined the students with expectations as "Student" in all graphs produced by SPSS. All the onboarding activities were sorted in ascending order of the overall score, which intuitively indicated the priority of the preferences of students with expectations for the onboarding activities.

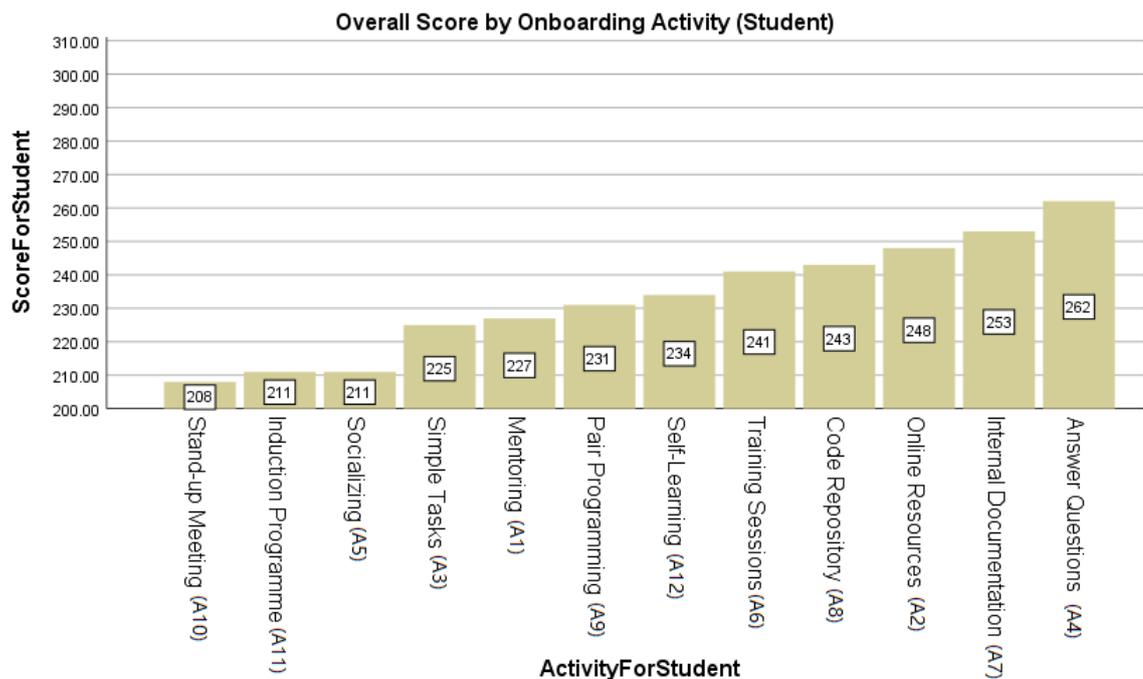


Figure 4-1 The preferences of students with expectations for onboarding activities

According to the histogram displayed in Figure 4-1, I can see *Answer Question* achieved the highest score while *Stand-up Meeting* achieved the lowest score, which means the onboarding

activity *Team members are willing to answer your questions about the work* was most expected by students but students felt that the onboarding activity *Have daily stand-up meeting with your team* was the least helpful to their onboarding when joining a new agile development team. In order to ensure the validity of the results, I referred to the statistics table generated by Qualtrics and compared the statistical measurements of the onboarding activities listed in Appendix 1. Each onboarding activity is numbered.

Appendix 1 presents the statistics table of students' preferences for each onboarding activity used in the current software development organizations. Based on the statistics table, I can more accurately find out the priority of students' preferences for the onboarding activities by comparing the standard deviations and variances of the onboarding activities.

As found in Appendix 1, the standard deviation and variance of A4 are 0.7 and 0.49 respectively, and the standard deviation and variance of A10 are 1.11 and 1.24 respectively. Compared to the standard deviations and variances of other onboarding activities, A4 has the smallest standard deviation and variance, which means the data collected from students' answers to A4 is distributed intensively. Therefore, I can claim that nearly all of students expected the team members to be willing to answer their questions. On the contrary, both standard deviation and variance of A10 are the biggest among all the onboarding activities. This does not necessarily prove that A10 is the least expected onboarding activity of students, but can only show that students' answers to A10 vary greatly. This means students had quite different preferences for having daily stand-up meeting when joining a new agile software development team, so I looked back to the statistical table of students' responses about their preferences for each onboarding activity, shown in Appendix 2.

The statistical table indicated 22.41% of students believed A10 was extremely important, 36.21% of students believed A10 was very important, 24.14% of students believed A10 was moderately important and 12.07% of students believed A10 was just slightly important. While there were still 5.17% of students thinking that it is not at all important to have daily stand-up meeting during their onboarding process. Given that students couldn't have a relatively uniform preference for the importance of this onboarding activity, thus I cannot have enough evidence to confirm if having daily stand-up meeting is important to new employee onboarding as recent graduates. The reason for this issue could be discussed in interview with students later on. In order to compare with the preferences of students with experience for onboarding activities, I have to assume that A10 is the least important to students in this research.

In addition, I have noticed the overall scores of some onboarding activities are only slightly different or even the same from Figure 4-1. For example, the difference in overall scores between A6 and A8 is just 2.

Referring to the overall score, A8 appears to be more important to students than A6. However, the standard deviation and variance of A8 are both bigger than A6, which means the distribution of students' preferences for A8 is relatively more scattered than the distribution of students' preferences for A6. Therefore, I cannot guarantee the priority of the importance of these two onboarding activities. In order to find out which one is more important, I compared the number of students' answers to each preference of A6 and A8. Then I discovered that nearly the same number of students found both onboarding activities moderately important and more. However, there were close to half of students thinking having a shared code repository containing the team's code would be extremely important to their onboarding when they join a new agile development team. While only 37.93% of students believed having some training sessions related to the work with the team was extremely important and most of the remaining students thought this activity was very important, rather than extremely important. As the standard deviation and variance of both A6 and A8 are not significant compared to the other onboarding activities, I think having a shared code repository containing the team's code and having some training sessions related to the work with the team can both contribute to new employee integration into a new agile development team as recent graduates, and A8 is proved to be a bit more important than A6 to students.

The overall score of A5 is the same as A11, which means the priority of the importance of these two onboarding activities is the same in general. However, the standard deviation and variance of A5 is much smaller than A11, which tells that the choices of students' preferences for A5 are more concentrated. While according to the statistical table in Appendix 2, most students believed spending time socializing with team members would be slightly more important to the onboarding process than being offered an induction programme. Hence, I can determine that students expected to have A5 more than A11, although they both had the same overall score.

After a series of comparisons and analysis, I reprioritized these 12 onboarding activities based on the student preference for each onboarding activity and formed a table 4-5.

Rank	Activity	Title	Definition
1	A4	Answer Questions	Team members are willing to answer your questions about the work
2	A7	Internal Documentation	Have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)
3	A2	Online Resources	Have online resources like Stackoverflow to look up technical

			information and ask questions readily available
4	A8	Code Repository	Have access to a shared code repository containing your team's code
5	A6	Training Sessions	Get some training sessions related to your work with the team
6	A12	Self-Learning	Be given time to self-learn from books and online tutorials
7	A9	Pair Programming	Be involved in pair programming in your work
8	A1	Mentoring	Have a mentor assigned to you for regular meetings
9	A3	Simple Tasks	Be assigned some simple tasks at the start of your job, to ease you in to it
10	A5	Socializing	Team spends some time together socialising
11	A11	Induction Programme	The company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues
12	A10	Stand-up Meeting	Have daily stand up meetings with your team

Table 4-5 The preference of students with expectations for onboarding activities

This section discovers the preferences of students for the onboarding activities abstracted from Yang (2017) and answers RQ1. The findings add a new perception to Yang (2017) and contrasts with the perceptions of practitioners.

4.1.5 Comparison between the preferences of students for onboarding activities with expectations and with industry experience

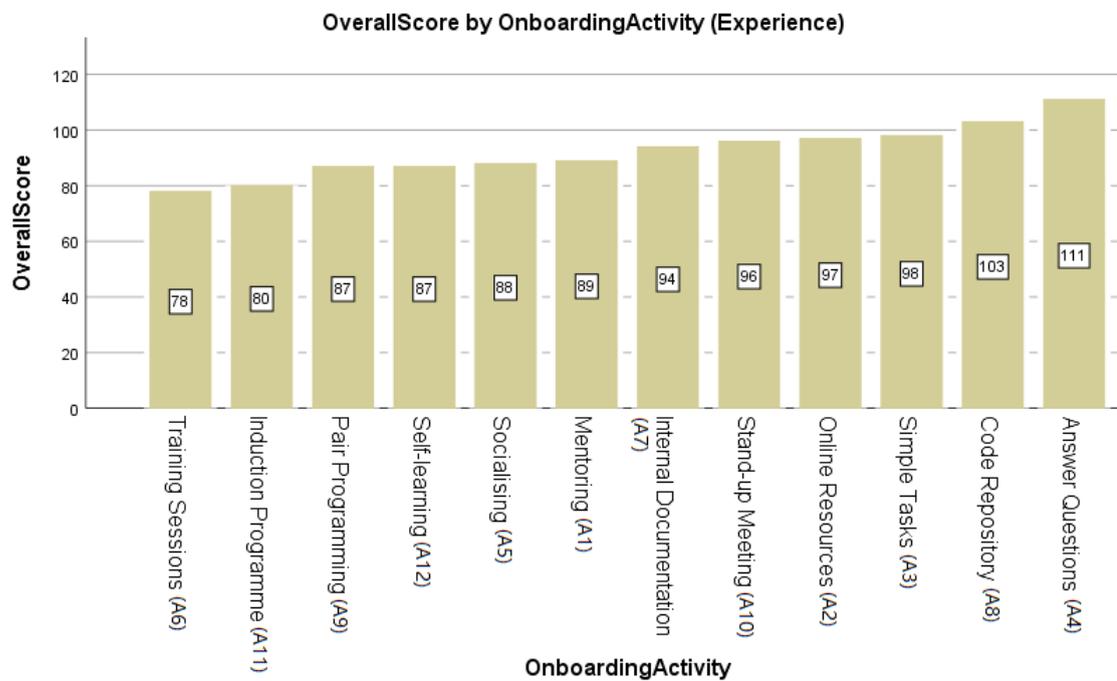


Figure 4-2 The preferences of students with experience for onboarding activities

	Experience		Expectation
A4	Answer Questions	A4	Answer Questions
A8	Code Repository	A7	Internal Documentation
A3	Simple Tasks	A2	Online Resources
A2	Online Resources	A8	Code Repository
A10	Stand-up Meeting	A6	Training Sessions

A7	Internal Documentation	A12	Self-learning
A1	Mentoring	A9	Pair Programming
A5	Socializing	A1	Mentoring
A12	Self-learning	A3	Simple Tasks
A9	Pair Programming	A5	Socializing
A11	Induction Programme	A11	Induction Programme
A6	Training Sessions	A10	Stand-up Meeting

Table 4-6 The preference of students with experience vs expectations for onboarding activities

By referring to Appendix 3 and 4, I have used the same way as the previous section 4.1.3 to sort the preferences of experienced students for onboarding activities, shown in Figure 4-2. Table 4-6 presents the preferences of students with previous team development experience and the expectations of students for onboarding activities.

I have seen that the preferences of the experienced students for almost all onboarding activities were different from the expectations of students, except for answer questions (A4) and induction programme (A11). The difference is particularly striking in *Have daily stand up meetings with your team* (A10), where students with previous industry experience had high preferences for A10 while students had the least expectations for it. In addition, experienced students preferred to start with simple tasks (A3) while students did not have high expectations for it. Therefore, I think the previous industry experience did have a significant impact on students' expectations for the onboarding support. As students had relatively high expectations for A7, A2, A8 and A6, I can see that students expected to get onboarding support from the fixed documentations and resources. While for students with previous industry experience, I don't find anything particularly special about their preferences for onboarding activities, but I can still see that they have higher preferences for the activities involved with others like Stand-up Meeting (A10), Mentoring (A1) and Socialising (A5). In order to explore the expected onboarding goals of each onboarding activity and the possible reasons for these differences could be discovered from semi-structured interviews.

The findings in this section can answer RQ1A and also be used to help design the interview questions.

4.2 Results of Semi-structured Interviews

This section investigates student expectations and the outcomes about onboarding activities when joining a new agile development team by analysing the content of semi-structured interviews with 10 university students. The outcomes discovered in this section can be also applied to answer the similarities and differences that were found in online surveys above, from the perspective of students.

4.2.1 Identity of interview participant

Student	Institution	Industry Experience	Year
A	AUT	Yes	Postgraduate
B	AUT	Yes	Postgraduate
C	AUT	No	Postgraduate
D	AUT	No	Postgraduate
E	AUT	No	Postgraduate
F	AUT	Yes	Postgraduate
G	AUT	No	Bachelor (3 rd Year)
H	AUT	No	Bachelor (3 rd Year)
I	AUT	No	Bachelor (3 rd Year)
J	AUT	Yes	Postgraduate

Table 4-7 Identity of interview participant

In this study, I have interviewed 10 students from Auckland University of Technology, including three Bachelor students and seven Postgraduate students. Due to the confidentiality of each interview participant's identity, each interviewee is assigned a code name from A to J. According to Table 4-7, four of students had relevant industry experience before while others did not.

4.2.2 Expected onboarding support from teams

I have obtained the onboarding support that students expected the development teams to provide (shown in Table 4-7), through the analysis of the conversations with these 10 students.

	Onboarding Support	Student
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1	Support from the friendly and comfortable work environment	A, C, E, F, G, I, J
2	Offer an internship programme	A, B, F
3	Be assigned a mentor	A, C, F, G
4	Help from online tutorials	A, G, J
5	Be assigned simple tasks at the start	C, D, E
6	Team members are willing to answer questions	C, H, I, J
7	Introduction about team members and supervisors	C
8	Team socializing	B, C, E, H
9	Introduction about the organizations	D, E, G

Table 4-8 Onboarding support that students expected from the organizations

There are 9 onboarding activities that students expected the organizations to provide listed in Table 4-8 and there are new some onboarding activities compared to the ones abstracted from Yang (2017).

1. Support from the friendly and comfortable work environment

For those students who had non-industry experience before said that when they were new to a new agile development team, they would feel stressed and anxious as they knew the work environment was definitely different from the study environment in the university. They believed if the team members were friendly, enthusiastic and helpful, this would create a friendly and comfortable work environment for them, thereby removing their negative emotions and quickly integrating into the team.

“The team members may be from different countries and ages, and I would feel strange to them at the start. But if they can be patient and respectful when I ask them for help, I will think the team members are very friendly, and the whole working environment is very comfortable, which makes me full of enthusiasm for my job.” (Student C)

While for the students who had industry experience before, they were not nervous about the new work environment but they expected to be welcomed and respected.

“If team members could show their welcome and respect to me when joining the new development team, I would feel like myself being part of a team and motivated to work in such a friendly and comfortable work environment for the long term.” (Student A)

2. Offer an internship programme

Students expected the teams to provide an internship programme for them when they firstly joined new agile development teams, and what’s interesting was that that all of these students had relevant industry experience before.

“I have no idea about how to get started on an actual task with the knowledge learnt from my tertiary study. I would like to start with an internship programme to accumulate some experience and learn job-related skills, so that I am able to get up to speed on my team job in the future.” (Student B)

Students could learn how to apply the theory learnt from university to the actual work during the process of an internship programme. They also desired to exercise themselves to lay a foundation for their future team jobs.

3. Introduction about team members and supervisors

During the interviews, only one student expected to have introduction about team members and supervisors.

“I want to know the habit of each team member like coding style, and also how long they have worked for the team, so it is good for me to know how to get along with different team members in the work. Certainly, it is also important for me to know the requirements and expectations of the supervisors for me, such as expected deadline, so that I am able to manage the time reasonably to complete a task.” (Student C)

4.2.3 Expected individual characteristics

In addition to the expected onboarding support from organizations, I have investigated and gathered the individual characteristics that student expected to have to help them get onboarded to new agile development teams through some probing interview questions. The following are the identified individual characteristics and some brief justifications from students.

- **Adaptive capacity** – Newcomers who have a strong adaptive capacity can help themselves integrate into any new development team quickly.

“Although the onboarding activities are designed to help me quickly integrate into the new agile development teams, having a good adaptive capacity can make things much easier in the beginning.” (Student A)

- **Quick learning ability** – For a newcomer, the most important thing is having quick learning ability. Whether learning from the experienced team members or from the internal documentations or online resources, the faster they learn the more they learn, and thus the more they learn the faster they can catch up with the team.

“Quick learning ability can help me learn things faster, it helps me quickly get started on a new task and adapt to the new work environment.” (Student C)

- **Self-learning ability** – When new employees start their new team development jobs, they cannot rely unflinchingly on the help from team members and mentors when encountering the difficulties. They also need some self-learning ability to independently think and complete their own tasks, so that they can get on with a new project faster.

“Asking team members or mentors for help is not the only way to help me easily work on a team project. It is still important for me to have an independent thinking and learn how to complete a task by myself.” (Student G)

- **Don't be shy** – When recent graduates firstly join new agile development teams, especially those without previous experience, they are normally nervous and shy in the beginning. Even when they have trouble at work, they might be too shy to ask their team members for help. This would lead to very little communication between new employees and the team members, which is not conducive to the team collaboration. Hence, as long as new employees frequently communicate with others, they can better integrate into the team and improve the entire team's productivity.

*“Being shy to ask team members or mentors for help is not good for me to start appropriate conversations with my teammates and mentors. Less communication negatively affects me to cooperate with the team members.”
(Student A)*

- **Actively participating in team socialization** – Frequently participating in team socialization could offer new employees more chances to know about their team members through the communication. Getting to know each other will make the working atmosphere more harmonious, which will also promote the integration of new employees into the new development team more quickly.

“Taking part in team social activities can promote the relationship between me and my teammates, which is conducive to my ability to work on team project with the team members.” (Student D)

- **Master at least one programming language** – As new employees of agile development teams, it is really important to master at least one programming language as programming is an essential part of the work. New employees who are not familiar with any programming language will find it quite difficult to get started on any project. This doesn't only negatively affect their own productivity but also slows down the progress of the whole team.

*“As a team member, I should basically know how to code a programme and there are similarities between programming languages, so mastering at least one programming language reduces the time spent on learning the programming. In this way, I can spare more time to learn other stuffs.”
(Student E)*

4.2.4 Expected onboarding goals of students

In order to know the student expected onboarding goals of each onboarding activity, each student was asked to prioritize the cards with onboarding activities on them, based on students' preferences. During the process of sorting cards, I asked the students a series of questions to probe their thinking. After gathering and summarizing the information from the interviews with 10 students, I have indicated the student expected onboarding goals of each onboarding activity in the following.

- **Team members are willing to answer your questions about the work**

The most important thing of working in a team that students think was the communication among the team members.

“If my team members are willing to answer my questions, I will be so pleased to discuss about the issues occurred at work. So that I can communicate with the team members more often and effectively cooperate with each other to complete the team project.” (Student H)

For students, building a long-term relationship of collaboration between new employees and team members can improve the productivity of the entire agile development team.

When new employees are in trouble at work, the help from team members is an easy and quick approach. The positive attitude of team members allows new employees to feel free to ask them for help, without being afraid to communicate with the team members due to shyness. The frequent discussions and communication with the team members can improve the relationship between new employees and their teammates, and thus improving the efficiency of team collaboration.

Moreover, new employees always spend the most time with the team members at work. The willingness of team members to answer questions about the work can help new employees work without a hitch and won't let them spend unnecessary time when facing a challenge (Tripp, 2016).

- **Have access to a shared code repository containing your team's code**

When joining a new development team, new employees are always unfamiliar with the coding style of the team project. Therefore, having access to a shared code repository is good way to help new employees well understand the team's coding style and the students said the shared code repository could also be a learning resource for new employees with weak programming skills, so as to avoid making mistakes in the future.

“I am a bit weak in programming. It would better give me access to a shared code repository, so that I can learn the way how the team codes a programme. This can benefit me to reduce the chance that I would make mistakes later in my own programming.” (Student C)

- **Have online resources like Stackoverflow to look up technical information and ask questions readily available**

Compared to cooperate with team members in the early stage, students preferred to look up the online resources, which could be faster to find the solutions to the problems by themselves than asking others for help. Students explained that learning from the online resources could help

them gain a wide understanding of professional knowledge and slowly catch up with the pace of the team.

“I can learn some job-related knowledge on my own in the spare time after work, seeking team members or mentors for help may take some time to wait for their responses.” (Student G)

- **Be assigned some simple tasks at the start of your job, to ease you in to it**

Some students think being assigned some simple tasks at the start can build up the experience and confidence for them step by step. If hard tasks were assigned in the beginning, they would feel stressed and frustrated because they may not be able to complete the tasks smoothly, which could slow down the integration of new employees into the new teams.

“As I just graduated from the university, all the professional knowledge I have learnt so far is all based on theory. I have no idea how to apply the theoretical knowledge properly into the practical work. If the difficult tasks were assigned to me in the beginning, I think I may not be able to adapt to such working conditions quickly which would then influence my integration into the new development team.” (Student D)

Students also expected to gradually apply the theory learnt from books into the practical work through an adjustment process. It would be difficult for them to use the theoretical knowledge flexibly to work on the difficult tasks at the start, and thus feeling lost in the work.

- **Have daily stand up meetings with your team**

As each team member might only focus on their own parts of the project, having daily stand up meetings with the team allows team members to report the progress of their own work and talk about what problems occurred in their work, as well as the corresponding solutions. This helps new employees understand what part of the work each team member is working on and monitor the progress of the project, which ensures new employees are on the right direction with other team members and also helps them manage the time to complete the tasks.

“Through daily stand up meetings, I can know what other team members are working on and how much of their work has been done. So that I can see if I am on the same pace of the team and if I am on the right track.” (Student B)

Students also expected to know the phased aims that the team leaders set for each team member so they can clearly understand what they are supposed to do in the future.

“I would like to know what tasks I should complete and what goals I should achieve in the following period. This ensures me to do the right things.” (Student E)

- **Have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)**

Students believed that the internal documentation provided the reference value and help for the future decisions on a project. Having the access to internal documentation can help them gain a deep understanding of the company's projects and the development direction of the company in the future.

“If I can know the information about the previous or ongoing organizational projects, I am able to deeply learn about the development directions of all the company and team projects, ensuring that I am working in the right direction.” (Student E)

- **Get some training sessions related to your work with the team**

When joining a new agile development team, it is difficult for newcomers to gain an insight into the project in the beginning.

“I expect to have a basic understanding of the company's projects and culture through the training sessions. I am a bit afraid to ask some silly questions that team members are unwilling to discuss with me.” (Student A)

Training sessions can help students be familiar with the project and understand the company culture, so that the team members will not be bothered by students' silly questions.

“I hope to get some training sessions to teach me how to use the software related to my work so that I don't need to waste time on learning these basic stuffs and I can feel confident when actually working on a team project.” (Student H)

Students expected to learn the software and essential skills related to the work to improve their personal abilities and reduce the time needed to get started on a new project, which gains the confidence of new employees and thus quickly integrating them into a new team.

- **Team spends some time together socialising**

Students expected to build up a social network through team socialising as they believed this would help them quickly adapt to the new work environment.

“As everyone in the team is definitely busy with their own most of the time, there isn't much time for me to get to know them during working hours. After work, I still have few chances to chat with the team members as they are normally busy with their private affairs. Therefore, the only opportunity to well know them is when I socialize with the team members in an industry event or a party.” (Student B)

It could be a good way to ask team members about the questions through team socialising, they can offer more valuable suggestions or share their personal experience on how to quickly integrate into the team during the relaxing conversation.

“I can have more chances to talk to different team members when socializing with the team. I can feel relaxed to chat with them about what I am struggled with at work, and they could give me some suggestions or tell me their personal experience about how to adapt to a new team job.” (Student E)

Students believed socialising with team members could have more opportunities to communicate with the team members in a relaxing environment, so that they could get to know each other better, which improves the partnership with team members. This is also conducive to the tacit understanding and efficiency of team collaboration.

“Socializing with the team can let me know more about my teammates and improve the relationship between me and my teammates. This helps me adapt to the new position more quickly and cooperate with other team members harmoniously.” (Student C)

- **Have a mentor assigned to you for regular meetings**

The students stated that having a mentor assigned to them could guide and lead them to be familiar with the new work environment. As newcomers without work experience tend to make mistakes and go in the wrong direction, it is necessary for them to have a mentor to guide them and make sure they are on the right track. Students also think that team members are always busy with their own work, mentors can wholeheartedly mentor new employees when getting started on a new project so that new employees wouldn't be struggled with an issue for too long.

“I am always shy to ask the team members for help when in trouble in the beginning, I don't want them to be interrupted and annoyed by my frequent questions. So, I think assigning me a mentor could avoid this problem and I won't feel overwhelmed and helpless when starting a new project.” (Student F)

- **Be given time to self-learn from books and online tutorials**

A few students believed self-learning was an essential skill that helps new employees constantly grow at work.

“Self-learning is an essential ability that every employee is supposed to have when working on a team project. With the help of team members, new employees can learn to work both independently and in teams faster.” (Student G)

They can learn either how to work independently or work in teams, which will help them quickly integrate into a new development team.

- **Be involved in pair programming in your work**

Only two students said pair programming could offer an opportunity for them to deeply discuss about the problems occurred in programming with the partner and learn from each other.

“It is a great chance to discuss about how to code a programme with my partner and learn from each other.” (Student J)

- **The company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues**

Students expected to understand the basic structure and culture of the company, including the superficial business of the company.

“When I join a new agile development team, I should have certain understanding of the structure and culture of the company I am currently working for. I can then understand what direction I am working in and what goals I am supposed to achieve.” (Student D)

By learning about the history, culture and structure of the company, students can better position themselves at work and set up a goal for you to move forward. And also, the induction programme could let them clearly determine if the company interests them and what rules new employees must follow.

I have formed a table 4-9 to clearly summarize the analysis of the expected goals of students for each onboarding activity from interviews, which answers RQ2.

Onboarding Activity	Expected Goal
Team members are willing to answer your questions about the work	<ul style="list-style-type: none"> • Build a long-term relationship with team members • Feel free to ask team members for help • Improve team productivity
Have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)	<ul style="list-style-type: none"> • A deep understanding of the company’s projects and the development direction of the company
Have online resources like Stackoverflow to look up technical information and ask questions readily available	<ul style="list-style-type: none"> • Be faster to find solutions to the problems • Gain a wide understanding of professional knowledge • Slowly catch up with the pace of the team
Have access to a shared code repository containing your team’s code	<ul style="list-style-type: none"> • Well understand the team’s coding style • Avoid making programming mistakes in the future
Get some training sessions related to your work with the team	<ul style="list-style-type: none"> • Be familiar with the project and understand the company culture

	<ul style="list-style-type: none"> • Learn the software and essential skills related to the work • Improve personal abilities and reduce the time needed to get started on a new project • Gain the confidence
Be given time to self-learn from books and online tutorials	<ul style="list-style-type: none"> • Constantly grow at work • Learn to work independently and work in teams.
Be involved in pair programming in your work	<ul style="list-style-type: none"> • Deeply discuss about the problems occurred in programming • Learn from each other
Have a mentor assigned to you for regular meetings	<ul style="list-style-type: none"> • Be guided and led to familiarise the new work environment • Be guided to work in a right direction. • Be given help wholeheartedly
Be assigned some simple tasks at the start of your job, to ease you in to it	<ul style="list-style-type: none"> • Build up the experience and confidence • Gradually apply the theory learnt from books into the practical work
Team spends some time together socialising	<ul style="list-style-type: none"> • Build up a social network • Have more opportunities to communicate with team members • Team members can offer valuable suggestions or share their personal experience • Improve the relationship with team members
The company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues	<ul style="list-style-type: none"> • Understand the basic structure and culture of the company • Position themselves • Set a goal in the work • Help determine the interest in the company • Clearly define the rules for employees
Have daily stand up meetings with your team	<ul style="list-style-type: none"> • Understand what part of the work each team member is working on and monitor the progress of the project • Work in the right direction with other team members • Manage the time to complete the tasks • Understand the phased aims of the work

Table 4-9 The expected onboarding goals of students

4.3 Expected Onboarding Goals between Students and Practitioners

This section aims to explore the differences or similarities by comparing the students' expected onboarding goals of the 12 onboarding activities indicated in online surveys with the practitioners' expected onboarding goals discovered in Yang (2017). By understanding the reasons of these differences and similarities, the agile development teams, changes can be made to the existing onboarding activities to provide new graduate employees with the most effective support, so as to maximize the success of their onboarding

The table 4-10 below presents the priority of the practitioners' preferences for the onboarding activities according to Yang (2017) and the students' preferences for the onboarding activities abstracted from the online surveys.

Rank	Practitioner	Title	Student	Title
1	A1	Mentoring	A4	Answer Questions
2	A2	Online Resources	A7	Internal Documentation
3	A4	Answer Questions	A2	Online Resources
4	A5	Socializing	A8	Code Repository
5	A6	Training Sessions	A6	Training Sessions
6	A8	Code Repository	A12	Self-Learning
7	A7	Internal Documentation	A9	Pair Programming
8	A10	Stand-up Meeting	A1	Mentoring
9	A9	Pair Programming	A3	Simple Tasks
10	A3	Simple Tasks	A5	Socializing
11	A11	Induction Programme	A11	Induction Programme

12	A12	Self-Learning	A10	Stand-up Meeting
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Table 4-10 Comparison between practitioners' and students' preferences

According to Table 4-10, the top five onboarding activities that practitioners think contributed the most to their onboarding were A1, A2, A4, A5 and A6, while students considered A4, A7, A2, A8 and A6 as the top five important onboarding activities. In the top five onboarding activities, the practitioners and students both had high preferences for three of them. In this case, the similarities and differences of goals from the perception of students can be better contrasted with the perception of practitioners in Yang (2017). Therefore, it is meaningful to deeply investigate and analyse the onboarding goals of the top five activities in Yang (2017) from the perception of students in this study.

- **Have a mentor assigned to you for regular meetings (A1)**

Practitioners interviewed in Yang (2017) explained that the contribution of A1 covers all the aspects of the expected onboarding outcomes indicated in Table 2-1. The practitioners felt assigning the mentors to them was particularly important to understand how to code and test to the team's expectations. The mentors can focus on the whole development process to help them qualified to be a productive team member.

While from the expectations of students, students think A1 made much less contribution to their onboarding. The expected onboarding goals of A1 were indicated in Section 4.2.4, but it was not considered to be an essential onboarding activity for new employees.

“If the mentor assigned was not the one that I expect, I will easily disagree with my mentor when making decisions.” (Student E)

“As I am willing to ask team members for help, it was not necessary to assign a mentor to me then.” (Student F)

“Mentors may only teach what they think is right and I would believe team members are able to give me more personal and diversified suggestions.” (Student H)

Rather than the benefits of assigning the mentors to new employees for regular meetings, students are more concerned about the characteristics of the mentors. If the students and mentors couldn't reach a consensus when making decisions, or the mentors were impatient when tutoring, students would feel that the mentors were not able to give the help that students expected, which would slow down their integration into the new teams.

So I can see that students believed the personalities and characteristics of mentors had a big impact on the contribution that A1 made to their onboarding.

- **Have online resources like Stackoverflow to look up technical information and ask questions readily available (A2)**

Practitioners explained that A2 could help newcomers understand how to code and test to the team's expectations, as well as how to use Agile artefacts and techniques. They expressed online resources were a way that newcomers could achieve by themselves without requiring the guidance of the team members.

However, as referring to the quotes from the interviews with practitioners, team members or mentors were so busy with their work most of the time so the newcomers couldn't ask them for help in time. And also, they didn't think A2 was able to enhance knowledge regarding job responsibility, project structure and company structure.

From Section 4.2.4, the students expected similar help from A2 to the practitioners. But some students preferred to ask team members or mentors for help instead of looking up the online resources on their own.

*“I prefer to receive help from team members or mentors, rather than look up the online resources when in trouble. As team members verbally explaining the problems to me based on their own experience can let me learn more knowledge.”
(Student I)*

I can see that what students were concerned about seems to be more about their own personality. Certainly, based on the preferences of students and practitioners for A2, the reasons were only for a small number of people and most students and practitioners were still inclined to A2 as one of the most helpful onboarding activities. So A2 came second and third in the expectations of students and the preferences of practitioners respectively.

- **Team members are willing to answer your questions about the work (A4)**

Practitioners explained that the help from team members contributed nearly all the expected outcomes of the organizations identified in Table 2-1. The most significant impact of A4 was about the understanding of term norms. The deployment of this activity may help newcomers obtain the knowledge of nearly every aspect. While the practitioners indicated that the standards of work quality could not be acquired from A4.

Students considered A4 to be the most supportive onboarding activity, which helped them solve problems most quickly and easily. Students expected to improve their awareness of team collaboration through the discussions with team members. However, due to the personal character, a few students felt A4 would not be that important to their integration as they were

shy to ask questions at the start and afraid to annoy their team members by frequently ask questions.

*“Due to my person character, I am too shy to ask the team members for help.”
(Student A)*

*“I am a bit afraid to ask some silly questions when lacking enough understandings of the skills and projects. Although team members were willing to answer questions, I am still worried about annoying the team members because of my silly questions.”
(Student B)*

I have found that the practitioners cared about whether they met the standards in practice, while students were more concerned about their personalities and the attitudes of team members.

Based on the preferences of both students and practitioners for A4, the majority of students and practitioners believed the influence of these reasons did not affect the contribution that A4 made to their onboarding.

- **Team spends some time together socialising (A5)**

Practitioners think A5 highly contributes to the culture context indicated in Table 2-1. They indicated that A5 can help them gain the information about term norms, company culture and the responsibilities, expertise and authority of other team members.

From the expectations of students, students tend to believe team socialising can create a relaxing environment for them to have more opportunities to communicate with the team members. They think it is an efficient approach to get valuable suggestions from the conversations with different team members and learn from team members' personal experience. A5 also helps students build up a social network and improve the relationship between them and their teammates. The expected onboarding goals of students were kind of similar to the practitioners.

However, most of students felt that A5 was not very helpful for their onboarding due to the personal characteristics. Students were more concerned about the reasons of their personal characteristics than the contributions of A5 made to their onboarding.

“As I definitely feel strange to the new team members when joining a new agile development team. So, I would feel embarrassed if socialising with the team in the beginning.” (Student A)

*“Due to my personality, I don't like to take part in any team socialising activity.”
(Student B)*

“As my work ability is not comparable to that of other team members, attending social events makes me feel alienated and inferior.” (Student E)

- **Get some training sessions related to your work with the team (A6)**

Practitioners in Yang (2017) explained that A6 made a greatest contribution to understand how to code and test to the team's expectations. While it cannot help them understand what work to do/how to choose tasks, and understand and meet the team's standards of work quality.

From the expectations of students, students had the same preference level for A6. Students expected to be familiar with the project and understand the company culture and learn the software and essential skills related to the work, so that they could therefore improve their personal abilities, gain the confidence and reduce the time needed to get started on a new project. While the only thing that students were concerned about was that students who had previous industry experience may feel like a waste of time to have training sessions in the beginning.

“It will normally take me a few weeks or one month to go through the training sessions. While I have learnt the relevant skills before, so I prefer not to have the training sessions and spend more time on learning other stuffs, so that I am able to quickly catch up with the pace of the team.” (Student B)

In order to clearly see the differences and similarities between the onboarding outcomes for practitioners and the expected onboarding goals of students for onboarding activities A1, A2, A4, A5 and A6, I have formed the following Table 4-11.

	Practitioner	Student
Have a mentor assigned to you for regular meetings	<ul style="list-style-type: none"> • Understanding team norms • Understanding company culture • Knowing the responsibilities, expertise and authority of other team members • Understand other's expectations of your own role's responsibilities • Understand what work to do and when • Understand the project structure and aims and the implications • Understand how to code and test to the team's expectations • Understand and meet the team's standards of work quality 	<ul style="list-style-type: none"> • Be guided and led to familiarise the new work environment • Be guided to work in a right direction. • Be given help wholeheartedly

	<ul style="list-style-type: none"> • Understand and show the agile mindset • Know how to use Agile artefacts and techniques that are part of the team's software development process • Understand the project domain knowledge and terminology 	
<p>Have online resources like Stackoverflow to look up technical information and ask questions readily available</p>	<ul style="list-style-type: none"> • Understand how to code and test to the team's expectations • Know how to use Agile artefacts and techniques that are part of the team's software development process 	<ul style="list-style-type: none"> • Be faster to find solutions to the problems • Gain a wide understanding of professional knowledge (<i>Understand the project domain knowledge and terminology</i>) • Slowly catch up with the pace of the team
<p>Team members are willing to answer your questions about the work</p>	<ul style="list-style-type: none"> • Understanding team norms • Understanding company culture • Knowing the responsibilities, expertise and authority of other team members • Understand other's expectations of your own role's responsibilities • Understand what work to do and when • Understand the project structure and aims and the implications • Understand how to code and test to the team's expectations • Understand and show the agile mindset • Know how to use Agile artefacts and 	<ul style="list-style-type: none"> • Build a long-term relationship with team members • Feel free to ask team members for help • Improve team productivity

	<p>techniques that are part of the team's software development process</p> <ul style="list-style-type: none"> • Understand the project domain knowledge and terminology 	
<p>Team spends some time together socialising</p>	<ul style="list-style-type: none"> • Understanding team norms • Understanding company culture • Knowing the responsibilities, expertise and authority of other team members 	<ul style="list-style-type: none"> • Build up a social network • Have more opportunities to communicate with team members • Team members can offer valuable suggestions or share their personal experience • Improve the relationship with team members
<p>Get some training sessions related to your work with the team</p>	<ul style="list-style-type: none"> • Understanding team norms • Understanding company culture • Knowing the responsibilities, expertise and authority of other team members • Understand other's expectations of your own role's responsibilities • Understand the project structure and aims and the implications • Understand how to code and test to the team's expectations • Understand and show the agile mindset • Know how to use Agile artefacts and techniques that are part of the team's software development process 	<ul style="list-style-type: none"> • Be familiar with the project and understand the company culture (<i>Understanding company culture</i>) • Learn the software and essential skills related to the work (<i>Know how to use Agile artefacts and techniques that are part of the team's software development process</i>) • Improve personal abilities and reduce the time needed to get started on a new project

	<ul style="list-style-type: none"> • Understand the project domain knowledge and terminology 	<ul style="list-style-type: none"> • Gain confidence
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Table 4-11 Onboarding outcomes of practitioners vs expected onboarding goals students

4.4 Implication of Findings

The investigation of the expectations of students for onboarding support in agile development teams have been the centre of focus in this study, with the purpose of revealing the relationship between the onboarding activities used in practice and students' perceptions for onboarding goals, as well as comparing the perception of students with the perception of practitioners identified in Yang (2017). In the first part of research, the expected onboarding activities, resources and durations of students were presented, which may give the agile development teams some ideas about what effective onboarding support can be provided for new graduate employees to maximize their onboarding success, and set the appropriate onboarding expectations for them. The second part of the research is discovering the expectations of students and the preferences of students with previous team development experience for the onboarding activities used in practice. This can identify how previous work experience influences the expectations of students for the actual onboarding activities, which helps development teams determine the effective onboarding activities for the new employees who had relevant experience before. For example, it seems to be more important for experienced students to be assigned simple tasks to start with than providing training sessions for them during the onboarding process in next team development jobs.

The third part of research is deeply exploring students' expectations for the outcomes of the onboarding activities used in practice. With the expected onboarding goals of students, the agile development teams can prepare an appropriate onboarding plan for new employees as recent graduates to meet their onboarding expectations, which can help them quickly integrate into the teams and make contribution to the team.

The final part of research is comparing the perception of students for onboarding activities used in practice with the perception of practitioners identified in Yang (2017). The comparison reveals the differences and similarities between students' expected goals and the organizational outcomes of the onboarding activities used in practice, and helps the agile development teams understand the differences of onboarding new employees as recent graduates and practitioners, so as to provide effective onboarding activities for new graduate employees to maximize the success of their onboarding.

5 Conclusion and Reflection

The research purpose of this thesis was to understand the expectations of students for onboarding support in Agile software development teams, and discover the differences and similarities between the perceptions of students and practitioners for onboarding process. This research has met its objective of discovering the factors and effective activities in the onboarding process from the perception of students, as well as the preferences of students for the importance of the onboarding activities used in practice. This study also conceptualized the relationships between the activities and expected onboarding goals of students, and the comparison with the perception of practitioners discovered in Yang (2017). Throughout the research process, a clear and focused theoretical basis has been adopted to ensure an in-depth understanding of the expectations of student for the current onboarding process.

According to the literature review, there were three factors found to influence the onboarding process and they were new employee characteristics, new employee behaviours and organizational efforts. The context of new employees in this thesis is defined as new graduate employees who join a new agile development team, which is different from the context of new employees defined in Yang (2017). Therefore, this thesis builds on the research of Yang (2017) from a different context to gain an in-depth understanding of the perception of students for new employee characteristics and behaviours by investigating their expectations for onboarding support. As a deep understanding of organizational efforts has been already obtained from Yang (2017), this thesis gives a comparison with the perception of practitioners while exploring the perception of students for expected onboarding outcomes of the organization efforts.

To answer RQ1: **what are the main expectations that students have about how they will be supported (i.e. onboarding techniques) to onboard onto a team in their next software development job**, the data collected from the open questions in online surveys was firstly used. There were 16 expected onboarding activities gathered from the responses of 58 students. Except for the onboarding activities similar to the ones identified in Yang (2017), the rest were mainly divided into three categories: (1) *Introduction to/about team members and leaders*, (2) *Introduction about my role and essential skills related to my position* and (3) *Comfortable and respectful work environment*. There were 14 distinct onboarding resources found, *Online learning resources* are the most anticipated by students and *Physical materials (e.g. Laptop)* are most special resources expected by students. The expected onboarding durations of students were also found that nearly all the students expected to be onboarded within the duration of 1 week to 2 months and most of them preferred the onboarding duration of 1 to 2 months.

To answer RQ1A: **how do the expectations of students compare for students with previous team development experience**, the data collected from the closed questions in online surveys was used. Firstly, the data collected from the preferences of students for the importance of the top 12 onboarding activities identified in Yang (2017) was statistically analysed by the overall scores, standard deviations and variances to present the priorities of students' expectations for the activities. Based on students' previous team development experience, the data collected from the preferences of students for the importance of the top 12 onboarding activities was then statistically analysed in the same way. By comparing the top five onboarding activities of the expectations of students with the preferences of experienced students, it was found that previous team development experience does have a small impact on students' expectations for onboarding. In particular, the activity *Team members are willing to answer your questions about the work* is extremely important to their onboarding in next team development jobs from the expectations of students, while experienced students felt it provided the least help for their onboarding in recent team development jobs. The activity *Be involved in pair programming in your work* was quite helpful from the perception of students with previous team development experience.

To answer RQ2: **what are the students' perceptions of the levels of contribution of different onboarding techniques to achieving different onboarding goals**, the semi-structured interviews were applied. There were 3 different onboarding activities and 6 personal abilities/characteristics found in this thesis, with the corresponding onboarding goals that students expected to achieve. In addition, the onboarding goals of each of 12 onboarding activities used in practice from students' perceptions were discovered from the semi-structured interviews listed in Table 4-9.

To answer RQ3: **how do expectations of students compare with the team onboarding techniques and goals identified by practitioners**, the findings of the online surveys and semi-structured interviews, and the findings of the previous study Yang (2017) were used. The expectations of students for the 12 onboarding activities were compared with the perceptions of practitioners identified in Yang (2017). By comparing the top five onboarding activities, students' and practitioners' perceptions for the onboarding goals of the activities were discovered, and also some quotes gathered from the conversations with students during the interviews were used to explain the reasons for the differences.

The findings of this study broadly investigate the expectations of students for onboarding support in their next team development jobs and gain a deep understanding of students' perceptions of the levels of contribution of different onboarding techniques to achieving different onboarding goals. They also provide some different ideas about the onboarding activities used in practice and give some new advice to the agile development teams on the current state of onboarding support. When new employees join new development teams as

recent graduates, the agile development teams can provide more appropriate onboarding support for them with the expected onboarding goals of students found in this study, to speed up their integration into the teams. This will quickly improve the productivity of new graduate employees and teams, reducing the financial loss to the organizations.

5.2 Limitations and Threats

In order to ensure the reliability of the data, I have defined sufficient details and supporting literature on onboarding of this study. However, there are a few limitations and threats of the research in this thesis.

Online survey is one of the research methods adopted in this study and the number of valid responses collected was only 58, which was far less than expected. Due to the small number of respondents, the variability of the data for the closed questions could be affected. The variability is determined by the standard deviation of the population, which was one of the important measures used in the statistical analysis of the expectations of students for the 12 onboarding activities identified in Yang (2017). Therefore, the expectations and preferences of students for the onboarding activities could lack the accuracy. For example, when investigating the preferences of students with expectations for the importance of the onboarding activities, the overall scores of *Have a mentor assigned to you for regular meetings* and *Be assigned some simple tasks at the start of your job, to ease you in to it* are quite close, and their standard deviations and variances are very close as well. It is quite difficult for me to accurately find out which one that students preferred. So, the small number of respondents would affect the representation of students' expectations and preferences for onboarding activities discovered in this study.

There is also a limitation for the data analysis of online surveys. As the data collected from the closed questions was statistically analysed by Qualtrics automatically, I can only refer to the standard deviation and variance of the data to prioritize the expectations and preferences of students for the onboarding activities. While if other statistical measures like T-test can be used for data analysis in this study, the results of online surveys would be more accurate.

Due to time constraints, there were only 10 students invited to participate in semi-structured interviews in this study. If more students could be invited, I would gather more different ideas about the onboarding support and the expected goals of the onboarding activities used in practice from the perception of students.

5.3 Future Work

This study has investigated the expectations of students for onboarding support and their onboarding goals of the expectations for the activities used in practice, as well as compared students' perceptions with practitioners' perceptions found from Yang (2017). As both the numbers of respondents to online surveys and participants of semi-structured interviews were relatively small, a further study can be made for a larger sample size to increase the accuracy of the findings of this thesis. As onboarding new employees as recent graduates is quite different from onboarding practitioners, it is valuable to gain a deeper understanding of the expectations of students for onboarding support. This can help the organizations and agile development teams prepare an appropriate onboarding program for new graduate employees to speed up their integration into the teams, and thereby increasing the productivity of the whole team.

Moreover, the online surveys used in this thesis gathered some other information from students' responses, such as gender, institution and country. A further research can be made on how new graduate employees in different genders, from different institutions or countries affect their expected outcomes of the onboarding activities used in practice. Therefore, the agile developments teams can prepare an onboarding plan in advance to provide the effective onboarding activities for different types of new employees as recent graduates with their expected onboarding goals.

This study only finds out different onboarding outcomes of the activities used in practice from the perception of students and the reasons that may affect their expectations. Therefore, a further research could be made to discover what other onboarding outcomes that students expect to have for the current onboarding support and which onboarding outcomes students have the highest expectations by interviewing more kinds of students, based on this study. It can greatly help employers provide effective onboarding support for new graduate employees to meet their expectations.

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Appendix

Appendix 1: Statistics table of the expectations of students

#	Field	Mean	Std Deviation	Variance	Count
1	to have a mentor assigned to you for regular meetings	20.09	1.09	1.18	58
2	to have online resources like Stackoverflow to look up technical information and ask questions readily available	19.72	0.78	0.61	58
3	to be assigned some simple tasks at the start of your job, to ease you in to it	20.12	1.08	1.18	58
4	that your team members are willing to answer your questions about the work	19.48	0.70	0.49	58
5	that your team spends some time together socialising	20.36	0.96	0.92	58
6	that you get some training sessions related to your work with the team	19.84	0.81	0.65	58
7	that you have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)	19.64	0.80	0.64	58
8	that you have access to a shared code repository containing your team's code	19.81	0.86	0.74	58
9	that you are involved in pair programming in your work	20.02	0.94	0.88	58
10	that you have daily stand up meetings with your team	20.41	1.11	1.24	58
11	that the company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues	20.36	1.08	1.16	58
12	that you are given time to self-learn from books and online tutorials	19.97	0.89	0.79	58

Appendix 2: Statistical table of the expectations of students

#	Field	Extremely important	Very important	Moderately important	Slightly important	Not at all important	Total
1	to have a mentor assigned to you for regular meetings	39.66% 23	25.86% 15	22.41% 13	10.34% 6	1.72% 1	58
2	to have online resources like Stackoverflow to look up technical information and ask questions readily available	44.83% 26	41.38% 24	10.34% 6	3.45% 2	0.00% 0	58
3	to be assigned some simple tasks at the start of your job, to ease you in to it	34.48% 20	34.48% 20	18.97% 11	8.62% 5	3.45% 2	58
4	that your team members are willing to answer your questions about the work	62.07% 36	29.31% 17	6.90% 4	1.72% 1	0.00% 0	58
5	that your team spends some time together socialising	20.69% 12	36.21% 21	29.31% 17	13.79% 8	0.00% 0	58
6	that you get some training sessions related to your work with the team	37.93% 22	43.10% 25	15.52% 9	3.45% 2	0.00% 0	58
7	that you have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)	56.90% 33	22.41% 13	20.69% 12	0.00% 0	0.00% 0	58
8	that you have access to a shared code repository containing your team's code	46.55% 27	27.59% 16	24.14% 14	1.72% 1	0.00% 0	58
9	that you are involved in pair programming in your work	34.48% 20	37.93% 22	18.97% 11	8.62% 5	0.00% 0	58
10	that you have daily stand up meetings with your team	22.41% 13	36.21% 21	24.14% 14	12.07% 7	5.17% 3	58
11	that the company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues	27.59% 16	25.86% 15	31.03% 18	13.79% 8	1.72% 1	58
12	that you are given time to self-learn from books and online tutorials	34.48% 20	41.38% 24	17.24% 10	6.90% 4	0.00% 0	58

Appendix 3: Statistics table of the preferences of students with previous team development experience

#	Field	Mean	Std Deviation	Variance	Count
1	to have a mentor assigned to you for regular meetings	20.29	1.72	2.96	24
2	to have online resources like Stackoverflow to look up technical information and ask questions readily available	19.96	0.89	0.79	24
3	to be assigned some simple tasks at the start of your job, to ease you in to it	19.92	1.11	1.24	24
4	that your team members are willing to answer your questions about the work	19.38	0.75	0.57	24
5	that your team spends some time together socialising	20.33	0.99	0.97	24
6	that you get some training sessions related to your work with the team	20.71	1.74	3.04	24
7	that you have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)	20.08	1.15	1.33	24
8	that you have access to a shared code repository containing your team's code	19.71	0.89	0.79	24
9	that you are involved in pair programming in your work	20.38	1.52	2.32	24
10	that you have daily stand up meetings with your team	20.00	1.15	1.33	24
11	that the company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues	20.67	1.57	2.47	24
12	that you are given time to self-learn from books and online tutorials	20.38	1.55	2.40	24

Appendix 4: Statistical table of the preferences of students with previous team development experience

#	Field	Extremely important	Very important	Moderately important	Slightly important	Not at all important	This did not happen	Total
1	to have a mentor assigned to you for regular meetings	45.83% 11	29.17% 7	4.17% 1	4.17% 1	4.17% 1	12.50% 3	24
2	to have online resources like Stackoverflow to look up technical information and ask questions readily available	37.50% 9	33.33% 8	25.00% 6	4.17% 1	0.00% 0	0.00% 0	24
3	to be assigned some simple tasks at the start of your job, to ease you in to it	45.83% 11	33.33% 8	8.33% 2	8.33% 2	4.17% 1	0.00% 0	24
4	that your team members are willing to answer your questions about the work	75.00% 18	16.67% 4	4.17% 1	4.17% 1	0.00% 0	0.00% 0	24
5	that your team spends some time together socialising	25.00% 6	29.17% 7	33.33% 8	12.50% 3	0.00% 0	0.00% 0	24
6	that you get some training sessions related to your work with the team	29.17% 7	29.17% 7	20.83% 5	0.00% 0	4.17% 1	16.67% 4	24
7	that you have access to internal documentation about the software and its structure and previous design decisions (e.g. wiki)	41.67% 10	25.00% 6	20.83% 5	8.33% 2	4.17% 1	0.00% 0	24
8	that you have access to a shared code repository containing your team's code	54.17% 13	25.00% 6	16.67% 4	4.17% 1	0.00% 0	0.00% 0	24
9	that you are involved in pair programming in your work	37.50% 9	29.17% 7	12.50% 3	4.17% 1	12.50% 3	4.17% 1	24
10	that you have daily stand up meetings with your team	41.67% 10	37.50% 9	4.17% 1	12.50% 3	4.17% 1	0.00% 0	24
11	that the company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues	33.33% 8	12.50% 3	33.33% 8	4.17% 1	8.33% 2	8.33% 2	24
12	that you are given time to self-learn from books and online tutorials	29.17% 7	45.83% 11	8.33% 2	4.17% 1	0.00% 0	12.50% 3	24

Appendix 5: Online survey questions

The purpose of this survey is to understand what on-boarding support you expect to get if you join an agile software development team as a new team member. The information will be useful to increase your own awareness of on-boarding as well as to inform current employers about what new team members expect. Also, the analysis of the data will contribute to the primary researcher's Masters thesis.

INSTRUCTIONS

Please answer each question honestly. Please try to answer all questions, but if a question makes you uncomfortable, you don't have to answer it.

You can obtain an executive summary of the survey results by emailing the primary researcher indicating your interest.

Primary Researcher
JUNKAI LIU
jht5389@autuni.ac.nz

Please note that completion of this survey indicates consent for participation.

Throughout the survey we use the term "on-boarding" with the following meaning:

On-boarding is the process and activities that happen between when you start as a completely new team member and when you feel that you are integrated into the team, understanding how to work and what is expected of you.

End of Block: Instructions

Start of Block: Open-ended Questions

Q1 When you start your next industry job, in what ways do you expect to get support from the organisation and team members to get on-boarded?

Q2 When you start your next industry job, what resources do you think you will have available to you to help you with the on-boarding process?

Q3 When you start your next industry job, how long do you think it will take to be on-boarded to the team?

End of Block: Open-ended Questions

Start of Block: On-boarding expectations

The following set of statements are different activities that could support on-boarding. Please indicate how important you think each one would be for you to on-board as a new team member for your next industry software development job.

Q4 How important would it be for your on-boarding ?

	Extremely important (19)	Very important (20)	Moderately important (21)	Slightly important (22)	Not at all important (23)
to have a mentor assigned to you for regular meetings (40)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have online resources like Stackoverflow to look up technical information and ask questions readily available (41)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to be assigned some simple tasks at the start of your job, to ease you in to it (42)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
that your team members are willing to answer your questions about the work (43)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
that your team spends some time together socialising (53)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

that you get
some training
sessions related
to your work
with the team
(54)

that you have
access to
internal
documentation
about the
software and its
structure and
previous design
decisions (e.g.
wiki) (55)

that you have
access to a
shared code
repository
containing your
team's code
(56)

that you are
involved in pair
programming in
your work (57)

that you have
daily stand up
meetings with
your team (58)

that the company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues
(59)

that you are given time to self-learn from books and online tutorials
(60)

End of Block: On-boarding expectations

Start of Block: Work experience

Q5

Have you ever worked in an industry software development team before?

Yes (1)

No (2)

End of Block: Work experience

Start of Block: On-boarding time

Q6 How long did you take to on-board in your most recent industry software development job?

End of Block: On-boarding time

Start of Block: On-boarding experience

The following set of statements are different activities that were used to support on-boarding. Please indicate how important you think each one was for you to on-board as a new team member for your most recent industry software development job.

Q7 How important was it for you in your most recent industry software development job ?

	Extremely important (19)	Very important (20)	Moderately important (21)	Slightly important (22)	Not at all important (23)	This did not happen (24)
to have a mentor assigned to you for regular meetings (40)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have online resources like Stackoverflow to look up technical information and ask questions readily available (41)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to be assigned some simple tasks at the start of your job, to ease you in to it (42)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
that your team members are willing to answer your questions about the work (43)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
that your team spends some time together socialising (53)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

that you get
some training
sessions
related to your
work with the
team (54)

that you have
access to
internal
documentation
about the
software and
its structure
and previous
design
decisions (e.g.
wiki) (55)

that you have
access to a
shared code
repository
containing
your team's
code (56)

that you are
involved in
pair
programming
in your work
(57)

that you have
daily stand up
meetings with
your team (58)

that the company takes you through an induction programme that includes some history of the company, the company structure, health and safety rules, and how to deal with Human Resource issues (59)

that you are given time to self-learn from books and online tutorials (60)

End of Block: On-boarding experience

Start of Block: Demographic Questions

Please tell us a little bit about yourself. This will be anonymous.

Q8 Please indicate your gender.

- Male (1)
 - Female (2)
 - Prefer not to answer (3)
-

Q9 Please indicate the name of the institution at which you are studying.

Q10 What country is your institution in?

Q11 What year are you in at your institution?

- 1st (1)
 - 2nd (2)
 - 3rd (3)
 - 4th (4)
 - Postgraduate (5)
-

Q12 What is your major for your qualification (e.g. software development, computer science)?

End of Block: Demographic Questions

Appendix 6: Interview protocols and questions

After agreeing on participation and a suitable day/time, each participant will be met in a neutral venue for the interview (e.g. library meeting room). The participants will have been sent the Participant's Information sheet previously.

Before the interview commences, the purpose of the research and the format of the meeting and will be invited to ask any questions of clarification.

The participants will be reminded about anonymity, confidentiality and their opportunity to withdraw their participation and data at any stage.

Participants will then be asked to read and sign the Consent form.

The first part of the interview includes some open-ended questions about their expectations of onboarding and some probing questions to uncover their reasoning.

Questions:

1. For the next job in industry what do you think will be important to help you with on-boarding into the new team you will work with? (Onboarding techniques, personal abilities/characteristics)
2. What do you expect the outcomes of each of these to be for yourself?
3. What on-boarding activities will you take on for yourself and which are you relying on the organisation or team to provide?

The second part of the interview will be based on a card sorting activity including a "think-out-loud" protocol, where the participant is asked to think out loud as they are sorting. The aim will be to understand the reasoning behind different levels of importance for each of the pre-determined on-boarding activities.

One on-boarding activity will be described on each card, prepared prior to the interview and they will be in a random order. There will be 10 cards.

Participants will be asked to pick out the top 3, thinking out loud what they are thinking as they do that. They will then be asked to pick out the top 3 from the remaining cards. They will then be asked to order each of the 3 sets of cards into order of importance to their rapid and successful on-boarding, thinking out loud.

Appendix 7: Participant information sheet

What are the discomforts and risks?

During the interview session there is a possibility you may feel uncomfortable about sharing your point of view about the on-boarding support.

You may feel uncomfortable about having your interview recorded.

When facing some survey questions that are hard to understand, the participants may give unreliable answers.

How will these discomforts and risks be alleviated?

In order to alleviate the first area of possible discomfort, you will be reminded of our assurance of confidentiality of all interview data at the start of the interview process. You may choose not to answer specific questions, and you can also withdraw from participating in the interview at any stage. You can also request that your interview data be withdrawn from the study before the completion of data collection.

The second possible area of discomfort will be addressed by stressing the voluntary nature of participation to both you and your company. We understand the time pressures faced by you as an employee, and recognise that it is not always feasible or practical to participate in such studies. While your line manager will know you have been approached, participation or non-participation will not be specifically recorded or communicated apart from the need to organise a specific time and date for your interview.

Recording of the interview is not a prerequisite of conducting the interview. Before the interview begins you will be asked for permission to record the interview. Even if consent to record is provided, you will be reminded that you can request that the recording be stopped or wiped at any stage of the interview.

The interview will be conducted at a neutral place away from study. This obviates the risk of being overheard.

What are the benefits?

This research will help you better understand what on-boarding support most organizations are providing for a new member when joining an existing development team. This should support the development of a realistic view of the likely on-boarding support they will receive, and better prepare them for the experience. It will also provide some ideas that could be useful for the team and organisation to improve their on-boarding practice.

How will my privacy be protected?

All of the materials related to the participants' information (consent form, recording, and interview notes) will be stored at AUT in a locked cupboard for at least 6 years. After that the material will be destroyed.

It is not anticipated that a transcriber will be involved transcribing the recorded interview. The researcher may transcribe small parts of the recorded material to use as exemplars and evidence of trends and claims resulting from the analysis.

The data from the interviews will be anonymised and analysed for principles and insights that are independent of the interviewee's identity. Furthermore, demographic data will be coded and the data stored in a separate place so that the identity of each participant will be separated from their responses.

If participants decide to withdraw from this research project for any reason before the completion of data collection, all of the materials relating to their interview will be destroyed as soon as practicable after their request.

The only people who will have access to your data will be the researcher and the researcher's supervisors.

What are the costs of participating in this research?

Time is the only cost to you. The interview will take around 30 minutes of your time.

What opportunity do I have to consider this invitation?

Due to time restrictions in undertaking the fieldwork for the research, we would ideally like to have notice of your agreement within a week of you receiving this invitation.

Will I receive feedback on the results of this research?

If you would like a report summarising the results of this research, please tick the appropriate box on the Consent Form, provided at the interview.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *Jim Buchan*; jbuchan@aut.ac.nz; Ph 09 921 9999 extension 5455.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, *Kate O'Connor*, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference.

You are also able to contact the research team as follows:

Researcher Contact Details:

JUNKAI LIU

Master of Computer and Information Science Lab,

School of Engineering, Computer and Mathematical Sciences

Auckland University of Technology

Private Bag 92006

Auckland 1142

New Zealand

Phone: + 64 9 921 9999 x 5410

Email: jht5389@autuni.ac.nz

Project Supervisor Contact Details:

Jim Buchan

Senior Lecturer

School of Engineering, Computer and Mathematical Sciences

Auckland University of Technology

Private Bag 92006

Auckland 1142

New Zealand

Phone: + 64 9 921 9999 x 5455

Email jim.buchan@aut.ac.nz

Stephen G. Macdonell

Professor

School of Engineering, Computer and Mathematical Sciences

Auckland University of Technology

Private Bag 92006

Auckland 1142

New Zealand

Phone: +64-9-921 9999 Ext.5811

Email: smacdone@aut.ac.nz

Appendix 8: Consent Form

AUT
TE WHAKANGA ARANGI
O TAMAU MĀKAU KĀO

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Kailin
 Participant's name: kailin
 Participant's Contact Details (if appropriate):
m.f.y8819@aucten.ac.nz

Date: 30/10/2018
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
TE WHAKANGA ARANGI
O TAMAU MĀKAU KĀO

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Andren
 Participant's name: Yichong Wang
 Participant's Contact Details (if appropriate):
Candevia87@gmail.com

Date: 07/11/2018
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
TE WHAKANGA ARANGI
O TAMAU MĀKAU KĀO

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: 徐磊
 Participant's name: Xin Lei
 Participant's Contact Details (if appropriate):
6.lei@aut.ac.nz

Date: 04/07/2019
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
TE WHAKANGA ARANGI
O TAMAU MĀKAU KĀO

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Bo Han
 Participant's name: Bo Han
 Participant's Contact Details (if appropriate):

Date: 04/03/2019
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

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AUT
TE WHAKANGA Kōwhiri
O Te Kaitiaki Take Kōwhiri

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Steven Wong
 Participant's name: Steven
 Participant's Contact Details (if appropriate): StevenWong77@gmail.com

Date: 05/03/2019
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
TE WHAKANGA Kōwhiri
O Te Kaitiaki Take Kōwhiri

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Jessie Li
 Participant's name: Jessie
 Participant's Contact Details (if appropriate): lijixin.821@hotmail.com

Date: 01/03/2019
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
TE WHAKANGA Kōwhiri
O Te Kaitiaki Take Kōwhiri

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Jason Kang
 Participant's name: Jason Kang
 Participant's Contact Details (if appropriate): JasonKang072@gmail.com

Date: 02/02/2019
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
TE WHAKANGA Kōwhiri
O Te Kaitiaki Take Kōwhiri

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams
Project Supervisor: Jim Buchan
Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 21/08/2018.
 I have had an opportunity to ask questions and to have them answered.
 I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.
 I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.
 I agree to take part in this research.
 I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: Jason
 Participant's name: Jason Wang
 Participant's Contact Details (if appropriate): q9nos11@auctuni.co.nz

Date: 30/10/2018
 Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number
 Note: The Participant should retain a copy of this form

2 July 2015 page 1 of 1 This version was last edited in July 2015

AUT
THE AUCTION UNIVERSITY OF TECHNOLOGY

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams

Project Supervisor: Jim Buchan

Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 22/08/2018.

I have had an opportunity to ask questions and to have them answered.

I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.

I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.

If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.

I agree to take part in this research.

I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: _____
[Signature]

Participant's name: _____
Laura Gore

Participant's Contact Details (if appropriate):
_____ *gore2194@gmail.com*

Date: *30/10/2018*

Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number

Note: The Participant should retain a copy of this form

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AUT
THE AUCTION UNIVERSITY OF TECHNOLOGY

Consent Form

Project title: Onboarding of Newcomers in Agile Software Development teams

Project Supervisor: Jim Buchan

Researcher: Junkai

I have read and understood the information provided about this research project in the Information Sheet dated 22/08/2018.

I have had an opportunity to ask questions and to have them answered.

I understand that notes will be taken during the interviews and that they will also be audio recorded digitally and transcribed.

I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.

If I withdraw, I understand that all relevant information including recordings and transcripts, or parts thereof, will be destroyed.

I agree to take part in this research.

I wish to receive a summary of the research findings (please tick one): Yes No

Participant's signature: _____
[Signature]

Participant's name: _____
Johnson Lau

Participant's Contact Details (if appropriate):
_____ *Johnson1294@gmail.com*

Date: *04/03/2019*

Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number

Note: The Participant should retain a copy of this form

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