

# Adoption of an Adaptive Learning Technology in Nurse Education

Students' Expectations and Experiences

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# Abstract

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Denne artikel præsenterer de første resultater fra et firårigt forskningsprojekt, der designer til og tester implementeringen af en adaptiv læringsteknologi, Rhapsode™, i en sygeplejerskeuddannelse i Danmark. Med udgangspunkt i kvalitativ empiri, der er skabt gennem 12 timers klasseundervisningsobservationer og interviews med 11 sygeplejerskestuderende, stiller artiklen spørgsmålet, hvordan de sygeplejerskestuderende oplever og tilpasser sig den nye digitale læringsressource. Resultaterne viser, at de studerende reagerede meget forskelligt på teknologien, og det er disse reaktioner, tilpasninger og erfaringer, der er i fokus i denne artikel. Hovedkonklusionen er, at det ikke kun er teknologien, der skal tilpasse sig de studerende; disse må også selv tilpasse sig den nye teknologi, hvis et sådant adaptivt læremiddel skal kunne anvendes meningsfuldt i en undervisningssammenhæng.

This article presents pilot findings from a four year long research project that is designed for and tests the implementation of an adaptive learning technology, Rhapsode™, in nurse education in Denmark. Based on the qualitative empirical data that was generated from 12 hours of classroom teaching observations and interviews with 11 student nurses, the article asks the question of how the student nurses experience and adapt to the new digital learning resource. The student nurses reacted very differently to the technology, and these reactions, adaptations and experiences are in focus in this article. The main argument is that not only must the technology adapt to the students, but the students must also adapt to the new technology to succeed.

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### Introduktion

Adaptive technology is part of a plethora of new technology trends (Hamilton & Hattie, 2021). Preliminary adoption of technology among nurses and in healthcare settings have shown good results (Fontaine et al., 2019), especially when digital technologies, e-learning, and so-called traditional teaching methods are used in conjunction with each other (McDonald, Boulton, & Davis, 2018), and when technology purports to meet educational needs for scalable personalized training and professional relevance (Smart, Ross, Carollo, & Williams-Gilbert, 2020; Williamson & Muckle, 2018). However, there is a latent discrepancy between the “clean rhetoric” of educational technology companies (EdTech) vying for consumers’ attention and the “messy reality” of technology use and adoption in educational practice (Selwyn, 2017). Research on the introduction of EdTech in different educational settings and user adoption shows that local cultures are of vital importance for success (Cuban, 2009; Ertmer, 1999). For example, some find that nursing students prefer physical textbooks over online reading materials (Mennenga, 2016). In such analyses, the importance of teachers’ competence, pedagogy, organizational resources, strategy, and leadership backing are often stressed relative to successful adoption. Meanwhile, the perspective of students is often neglected as a crucial measure of successful technology adoption. This partly shows from the fact that widely recognized frameworks for technology adoption in education focus predominantly on the competences, dispositions, and actions of the instructor (e.g. T-PACK (Herring, Koehler, & Mishra, 2016) and SAMR (Romrell, Kidder, & Wood, 2014)). Partly, recent reviews show that the learning designs associated with the use of adaptive learning technologies in nursing

education lack transparency and justification for the design developed, and among this also a reflection on the role and actions of the students both in preparation and class (Andersen, Jørnø, & Nortvig, 2021; Fontaine et al., 2019). This has particular significance for adaptive technologies, as the technology's primary focus is on the student user. Many adaptive learning platforms have been designed as single-user experiences, placing the student at a computer alone in front of the adaptive technology. As such, the technology ignores social aspects of learning by design and, to a certain extent, bypasses the traditional role of the teacher as a mediator and gatekeeper of knowledge.

Whether the teacher adopts the technology is therefore less important than how students adapt to said technology, as student attitudes and expectations, particularly how they frame the learning experience, become decisive factors for technology acceptance.

There are many partially conflicting definitions of adaptive technology (confer Holmes et al., 2018; Knutov, De Bra, & Pechenizkiy, 2009). In this article, we refer to adaptive technology as technology designed to analyze and "accommodate a learner's specific needs by making appropriate adjustments to the learner's experience with the goal of enhancing learning outcomes" (Plass & Pawar, 2020, p. 276). In the present study, an adaptive learning technology is implemented as part of the student nurses' preparation for class, and the teaching and learning sessions that include the technology are designed, tested, and redesigned in collaborations between educators, and in this first phase of the longitudinal study, we, the researchers and authors of the present article, observed, interviewed, and analyzed the educational context in the broadest sense of the concept.

The adaptive learning technology, Rhapsode, is described by the company behind it as a technology that creates a "personalized experience for employee, student or trainee. It applies science and technology to improve how and what is learned" (Area9Lyceum, 2022, n.p.). On the Rhapsode platform, students can read or listen to text, and they are asked questions in relation to the subject matter. The adaptive engine is driven by an artificial intelligence which selects the text and questions for the individual students based on their answers and metacognitive competencies. Employing this technology in a nurse education context, students are asked to prepare for class in a way that is unfamiliar to them. Before using Rhapsode – the students told us during interviews – they were to prepare for class by reading book chapters or other written material, however, many of them did not do so or they found it difficult to concentrate while reading. With the new technology the students are asked to read the text online in the Rhapsode platform and they are encouraged to answer questions immediately after and in close connection with the reading of the

texts. Their ‘homework’ is not done until a certain preset percentage of questions is answered correct, *and* the students indicate that they are sure that they understand the learning content. In addition, these interactions with the technology generate data reports for the educators to see, which provide an opportunity to plan their lessons with a specific target on the more difficult areas of the specific day’s lessons (Jørnø et al., 2022).

However, this new way of preparing for class while interacting with an adaptive technology and the new opportunity for the educators to monitor (or “spy on”) the individual students’ preparation for class raises both didactical and ethical considerations among the nurse educators, and – as we will discuss below – students responded, reacted, and adapted to the adaptive technology in several different ways. Submerged in this messy educational setting, we examine how the students initially react and adapt to the technology and how they explain their attitudes. Thus, we ask the following question:

**How do student nurses experience and adapt to the introduction of the adaptive learning technology Rhapsode as a novel learning tool to be used in science subjects in nurse education?**



In the following section, we outline the methods and theory. Subsequently, we present our analysis and interpretations.

## Methods

The empirical data for this article were collected during a large development project in nursing education in Denmark. The overall goal of this project is to create innovative learning designs that focus on professionally relevant activities for nursing students. To do so, nurse educators, an EdTech company, and researchers collaborated to implement an adaptive learning technology, Rhapsode™, as part of the students’ homework preparation before taking part in on-campus activities. As we, at the time of writing, still are at the beginning of the project, the empirical data stem from the pilot trial with the students.

The overall project is guided by a Design-based Research methodology (Amiel & Reeves, 2008; Anderson & Shattuck, 2012; Cobb & Gravemeijer, 2008), and in this first phase of the four year long project, we (the researchers) are studying the educational context before and during the first implementation of the technology. In this phase, the nurse educators have planned and conducted the classroom teaching, while we observed and interviewed them and their students afterwards with our research interest focused on how the adaptive learning technology was used, understood, explained, adopted, and/or rejected.

To study the student nurses' initial adoption of the new technology, we chose a qualitative methodological design where we let interview data deepen observational data (Denzin, 2012). This year's cohort of student nurses consisted of four classes (approximately 130 students), and all of them were exposed to the adaptive technology, Rhapsode. The adaptive learning platform was to serve as their homework preparation for science subject teaching for two weeks instead of normal preparation with a textbook. We observed one lesson in each class on the day nurse educators introduced Rhapsode, and we observed a second time (during two lessons) when the educators and their students evaluated their first experiences and learning outcomes.

Due to differences in framings and presentations of the technology by the educators, we decided to initially code the observations with a focus on how the technology was framed by different users and its role in the learning design. Based on our first interpretations of these data, we designed the interview guides to saturate and elaborate the findings. Along with that, during interviews, we showed the students screen dumps from their interactions with the technology and asked them to comment and discuss their first expectations, their experiences while working, and their subsequent evaluations afterwards. These were narrowed down to focus on different aspects of framing the technology: students' expectations of the technology before working with it, the students' descriptions of their encounters with Rhapsode, their use of the technology, and their experiences and evaluations of the specific technology.

To describe and understand the variety of experiences and reasons for rejection or collaboration with the technology, we chose a stratified variation sample strategy (Corbin & Strauss, 1990, 2008; Robinson, 2014) for our interviews: We asked 2-4 students each with positive and negative first impressions of the adaptive technology to participate. In all, we interviewed 11 students; two interviews were conducted in groups of two and three students, and due to the students' busy schedules the rest were conducted as individual interviews. All interviews were recorded, transcribed, coded, analyzed, and discussed collaboratively.

The coding of the transcribed interviews was undertaken with inspiration from grounded theory (Charmaz, 2010; Clarke & Friese, 2013; Thornberg & Charmaz, 2012). This means that we created the categories inductively while analyzing the transcripts thematically and highlighting any statements from the students that expressed or accounted for their reactions, understandings, strategies, feelings, reflections and so on towards the learning technology and the way they used it as homework, tried to hack it, cheat it, or learn from it for example. The highlights were then grouped between 'expectations,' 'technology meet,' 'use strategy,' and 'experiences,' and the highlighted quotes were given a code (for example disappointment, enthusiasm, surprise, hack, test, collaboration and many more). All of us read, grouped, and coded all transcribed interviews, and we discussed these among us. Thus, we ended up with an overview of a very complex and multifaceted material that we compared with different theoretical approaches and finalized by looking at it through a Goffmanian perspective.

## Theoretical approach

In the following, we provide an analysis of the students' attitudes and framing of the Rhapsode technology using Irving Goffman's Frame theory (Goffman, 1974) and his concept of how actors define the situation they are in (Goffman, 1959). Both theoretical constructs allow us to look for traces of different framings of the technology – ranging from the intentions of the developers of the Rhapsode technology, over the administrators who introduced it to the nursing program, to the educators and students who, each in their own way, interpreted the technology and its impact on the use situation. The differences in framings lays the foundation for potential conflicts.

Goffman speaks of "frames" (Goffman, 1974), that is, schemata of interpretation that explain what event is taking place and what one is able to and supposed to do in the given situation. Thus, these frameworks guide our expectations and appraisals of how others behave and perceive one's actions (guided doings). Similarly, Goffman (1959) conceives of the "definition of the situation" as a personal interpretation that has implications for the participants' interactions and for their expectations of each other. Goffman writes:

” When an individual projects a definition of the situation and thereby makes an implicit or explicit claim to be a person of a particular kind, he automatically exerts a moral demand upon the others, obliging them to value and treat him in the manner that persons of his kind have a right to expect.  
(Goffman, 1959, p. 24)

In general, the frames are implicit and inferred. The “moral demand” refers to the different expectations embedded in the roles or ideas of how one acts and is consequently perceived in a given frame. One such role is what Ulriksen calls “the implied student” (2009). This role entails a social identity – a specific “way of seeing” the world, and an accompanying blindness of what to not see in an educational setting. It follows stabilized patterns of behavior and expectations with implicit codes, norms, and values. These patterns translate into images of what it means to study, how to study, and what studying looks like. In other words, how to be a student and eventually a professional.

While the student role is constantly open for negotiation, conflicting demands on the role can collide as different constraints are introduced. Particularly, technology such as the Rhapsode technology, make implicit and explicit demands of the user following a logic decided by the software company and engineered prior to its application and therefore context independent. In design, this can be referred to as the assumption of an “implied user” (Kannabiran, Bardzell, & Bardzell, 2012) or “model user” (Derboven, Geerts, & De Grooff, 2013) embedded in the technology. As such we do not consider frames and roles as ‘simply’ attitudes and interpretations. Rather, we find that social practices are equally constrained by social and technological constraints, in the form of the learning design and digital materiality of the platform (Kallinikos, 2002; Leonardi & Barley, 2008; Orlikowski, 2007; Orlikowski & Barley, 2001).

## Findings

The thematic analysis (Braun & Clarke, 2006) of the codes produced by the interview related to feelings and expressions of the students’ expectations of and experiences with Rhapsode. Three different categories of student groups emerged corresponding to different adaptations to the adaptive technology. Some of the students found collaboration with the technology easy, some were discouraged by the soft-



ware and expressed feelings of frustration, even using the word "hate". The last group saw an opportunity for a better learning outcome and tried to adapt to the system despite its perceived shortcomings that is illogical answers and opaque learning paths. In this section, we present these categories and illustrate them, using quotes from the interviews, and in the end of this section, we narrow it down to the three groups of student answers and discuss the students' experiences and explanations accordingly.

## The implied student

Juxtaposing the three overall adoption stances taken by the students provides, at first glance, disparate and contrary views on the Rhapsode technology. Looking further into the data reveals, however, a somewhat cohesive pattern among the three groups when we elaborate on some of the categories below. The project mainly aimed to examine ways of integrating an adaptive learning tool in existing nursing education. The participants were students at different stages in their educational lives personally, but all were newly enrolled in nursing education. As such, all of them were, at the time of the intervention, in the early stages of socialization into the specific culture of being a student nurse. This includes new ways of solving problems, asking questions, and studying in general, leaning into the role of "the implied student" (Ulriksen, 2009). In other words, they were all in the early days of creating frames (Goffman, 1974) for their experience as nursing students and molding their professional identity. At the time of the intervention, the students had not completed any courses, and so had no established routines other than those carried over from primary and secondary school (For example doing homework). Furthermore, the intervention was placed at the beginning of a new course. Thus, two factors became relatively important relating to how the students defined the situation. First, the intervention was designed to replace regular homework (reading textbooks) with preparation work done in advance on an adaptive learning platform, Rhapsode. This definition of the situation was, however, not communicated adequately. Second, some of the students erroneously perceived their preparation work on the platform not as preparation but as a type of interim test situation or regular multiple-choice quiz. Therefore, two framing aspects of the situation were in play for the students: First, their scheme of 'how preparation for class takes place for nursing students' was being

altered and explicitly pointed to by the enthusiastic group and the disappointed subverters. Secondly, their scheme of 'what they were supposed to do while working on the platform' also failed for some of them. For many students, their immediate framing of the two were incompatible with the intended form of work on the platform and its intended place in the educational design. In other words, the "implied user" necessitated by the technology collided with the "implied student" upheld by many of the students. We pursue this line of thought below in three areas: expectations, meeting the technology, and their use of the technology.

### **Expecting the adaptive technology to replace textbooks 1:1**

In this case, the overarching problem was that both the students interpreting the situation as intended by the designers (preparation replacing homework) and those who understood the work in other ways were, for the most part, disappointed. There was nothing inherently wrong with the introduction given; however, the way preparation work is presented in Rhapsode it ostensibly occupies the same "place" as any other text, assignment, or task given to students as homework. There was nothing to indicate that the students who worked with the Rhapsode technology were required to adjust their preparation practices. Some of the students' reactions were that their preparation time was much longer than usual, that it was difficult to take notes, that they had difficulty navigating what to read and what to emphasize. These reactions reveal that students tried to fit work on the platform into their existing frame. For example, reading a text for class one student remarked: "...but I didn't know if it [Rhapsode] was a form of learning, or it was a test or if it was some type of webpage or what it was?" In contrast, students who were stressed that the "test" stretched into the second, third, or fourth hour or those who were frustrated over "going in circles" indicate expectations of an online test behaving in a predictable linear fashion. A student expressed it this way: "I wondered what I had misunderstood in class and, you know, I felt like, there was this much time allotted, you're supposed to make it in this amount of time, and I think that's what stressed me out." The mismatch between expectations and the actual behavior required by the technology can therefore be said to be an example of what Derboven, Geerts and De Groof (2013) called "layered appropriation." Developers, administrators, teachers, and students each in turn apply their own layers of interpretation to make sense of the constraints of the technology. These layers are not necessarily communicated or aligned. The introduction to the platform was therefore inadequate because it neglected the social practices *surrounding* the platform. What was missing was an explicit re-framing of how preparation was

to be understood and dealt with differently. This would have provided students with an opportunity to reconsider how to rearrange their workday and study rhythm. Some students arrived at this conclusion:

” I would say [to a new student], here at our college we have a completely new way of learning...you have the opportunity to read the text and be tested immediately...And you have the opportunity to practice, practice, practice, until it gets stuck in your head...

### **Different experiences when meeting the technology**

As we have seen above, the students defined the situation based on their former experiences and their interpretation of their educators' presentation of the technology in class. Accordingly, they expected the Rhapsode™ technology to behave in a certain way as they started working with the technology.

However, the definitions they arrived at varied significantly. Some students perceived Rhapsode as presenting learning content in a way that resembles textbooks and multiple-choice quizzes. These students felt that they intuitively knew what to do and could act as they usually do while moving through the many pages and questions. These students experienced the technology as aligned with their self-perception as student nurses (that is their version of “the implied student”). One of the students said:

” Rhapsode is a learning resource that presents text to students, and you can choose the level. You are to answer questions, and if your answer is correct, you move on; otherwise, you go back and get more text, figures, and videos.

Another student described her experiences: “I was initially confused. It was missing something [...]. But when I came home, it all fit. Her [the technology] voice and everything ... fit”.

In contrast, some students experienced the technology as behaving in ways that clashed with their expectations. One of the students explained that she misunderstood the technology because it behaved strangely:

” She [the synthetic voice in Rhapsode] began with stuff that was not introduced to us at all ... and in a language that made you think: What? So, I stopped and left. [...] It was like, if you had answered a question, it [Rhapsode™] wanted an elaborate answer, but maybe I misunderstood, I do not know, but that is my experience.

Many students said that some of the misunderstandings were due to the novelty of the technology, and the fact that they did not know what to expect from it: they struggled to *define the situation*. Isabella<sup>1</sup> said:

” I thought that it would be somewhat exciting. [I thought:] I’ll try it out. I am open to new things [...] but I had no idea of what it was ... I am not completely rejecting this way of doing things: I think I was just very surprised by how hard I thought it was.

As a consequence some of the students made judgments as to how compatible the technology is with how they perceived the role of a nursing student: ”This is maybe not the obvious choice for nurses. We work face to face. It is a bit weird that it’s for us”.

### **Different stances on the technology**

Understandably there were different reactions and strategies for adaptation to such a combination of frustrated expectations and failed attempts to define and interpret the use of Rhapsode. Some outright rejected the technology and were unwilling to invest time and energy to learn the new system. ”I hated it, with a vengeance...it destroys your motivation...” said one student. A few students doubted the usefulness of the platform and attempted to employ so-called work-arounds (Alter, 2014) to modify the system or alleviate the burden placed on them to maintain a status quo. One student reported: ”You took screenshots of the answers...so if they came again, you could just retrieve them and I know that a lot of people said they’d done that”. Some perceived the system as flawed and kept a back-up system in hand (for instance, taking notes as if they were reading a book). A student said, ”I also took notes, because there was a lot of text...but I did it because you can use your notes again”.

Conspicuously, some of the students referred to the technology as a person, and that they expected ”her” to behave, adapt to, and actively differentiate their learning as a teacher might do, which aligns with studies of anthropomorphism of technology (Epley, Waytz, & Cacioppo, 2007).

When clustering the students’ many experiences and explanations a pattern emerged across the interview groups: one cluster of students enthusiastically collaborated with the technology, another cluster of students were disappointed by it and a last one saw its potential in spite of the technology itself. This will be elaborated further below.

<sup>1</sup> All names are pseudonymized.

### **The enthusiastic collaborators**

During the interview, a cluster of three students indicated that they understood how to answer, read, and take notes using the Rhapsode technology, and they felt that the way the content was presented on their computer screen was easy to understand. Peter frames this as follows: "I felt that I learned a lot. It requires note taking. It turns out to be a bit of a back and forth between the computer and me. I think that is a good thing". Later on, he sums up:

” You can almost fall asleep with a book and your thoughts fly. Not here. You are engaged the entire time. You follow, and you do not start to plan your supper. Your brain gets affected and stimulated in a completely different way than when you read a book.

Liza appreciates the stimulation of the brain too: "The technology here was different. I was stimulated in a very different way [...] It kept me awake because [the synthetic voice] is so annoying [laughs]". Due to a former experience of practicing driver's license theory through repetition of questions and correct answers, Sarah is confident that the corresponding concept of Rhapsode is a way to learn cytology as well:

” I simply learned the theory by answering repeatedly until I had zero wrong answers, you know. What I like about this [technology] is that you have the opportunity – which is great – to test your knowledge [...] and keep on doing it until you get it. I think that is megacool.

These students collaborated smoothly with the adaptive technology, as they immediately recognized its potential for contributing to a better learning outcome. They appreciated the presentation of the content, and they found that repetitive questions were an opportunity to learn. These students defined the situation (Goffman, 1959) where they prepared for class by the use of Rhapsode as effective learning and they easily understood how the technology wanted them to work.

### **The disappointed subverters**

This cluster consisted of three students who expressed feelings of frustration and helplessness during the interviews, as they felt that they were at the mercy of the Rhapsode™ system. As in Sarah's case, former experiences and expectations affect the perception of the technology. Charlotte says:

” I thought it would be exciting. Technology and things like that, that is exciting. Great. To do something other than the boring stuff in books. I expected multiple-choice quizzes and animation and opportunities to read the text aloud”. However, Charlotte was ultimately disappointed: ”It was not for me at all. It was deady dull. I scamped it. I had to finish it. I did not read the text, I just clicked ‘I am sure’ in order to avoid the questions.

Mollie was equally disappointed. She had a health degree already and did not anticipate the learning content to be so difficult for her: ”It was like you got bombed with a lot of stuff, then you read and read, and then there was simply so much that you could not really relate to afterwards”. Not only the content but also the technology concept was too hard to handle for Mollie: ”That voice, that lady talking over everything – I had to drop that pretty fast, cause that just confused me even more”. In the end, Mollie gave up and tried to hack her way out of the system: ”I had to get through it and try to just press something [random] – to get it over with”.

These students experienced frustration when working with Rhapsode. They did not see it as a technology that adapts to their knowledge or way of learning; they found the subject presentation too difficult, and they did not understand the questions or why they had to answer them many times, so they ended up refusing to collaborate. Their goffmanian moral demands were not met.

### **The students that collaborated in spite of the technology**

The third cluster consisted of five students who experienced the same kind of frustration and disappointment as the counteracting students, but this cluster collaborated with the technology and found the concept rewarding and instructive. Emma says: ”I hated it fervently. I hated it because when you answer a question – it ruins your motivation – you think you gave the right answer, and you write ‘I am sure’ and then it says, ‘You got it all wrong’”. However, Emma worked her way through and summed up: “[...] it forces me to learn something, and that’s quite alright, you know what I mean?” Sophia expressed a similar thought: ”I think it was extremely annoying to be in the thick of it, but afterwards I was super happy that I had completed it”. Later she summed up: ”[it was frustrating sometimes], but you learned a lot from it anyway”. Mia disagreed:

” Yeah, well, I do not think it was frustrating, but I think that was because I was fairly ... well, I knew it was not a test like that, and I knew that it was more, like, to see what you know.

These students met the challenges, but they continued to look for meaning and work for solutions. When Mia had to answer the same questions on the platform over and over again, she found it annoying so she “...was like okay, now I have to go back”. She read again and got the answers right.

This last cluster of students insisted on finding meaning in the digital learning resource that at first appeared strange and counterintuitive. They ended up redefining their first definition of the situation while finally accepting the technology’s premise for learning and found the learning process rewarding, especially in retrospect.

## Conclusion and discussion

As mentioned in the introduction, the majority of frameworks for integration of new technology in education empathize the perspective of the educator. This is of importance. However, as we have shown in the paper the success of the integration of edtech is also highly depended on the students’ ability and willingness to adapt their practices of preparation and studying to the new, adaptive technology. Furthermore, we have shown that students are not alike, and thus the introduction of new technologies should cater to their differences in order to gain success.

That being said, our study also has shortcomings that guide obvious points of interest for future studies. As it might be clear at this moment, we have not had any data or evidence from the students’ actual interactions at home on their computer screen with the learning technology, and thus we cannot say how they interacted in the situation, when they got frustrated or relieved, chose to adapt or not or whether for example their fellow students’ interpretations of the learning situations impacted their own interpretations afterward. Likewise, the data that we have used in this article do not include data from interviews with the educators, and thus we cannot provide detailed explanations about the learning design that were implemented the specific dates. We will get back to this perspective in another publication (Jørnø, Nortvig & Andersen, 2022). In this article, however, our empirical focus and research interest have been set on the students’ experiences and thus reflections and interpreted reactions with working with and trying to adapt to an adaptive learning technology, and we will sum up on these below.

In our research question, we asked how student nurses react and adapt to the introduction of the adaptive learning technology, Rhapsode, as a novel tool for preparation for class in nurse education. We found in our analysis that the students adopted, collaborated, and/or rejected the technology for a variety of reasons. First, although a minor group of students found collaboration and working with the technology easy and intuitive, a lot of the students seemed to find that their self-image as a student and as a nurse and preparing for class at the university collided with the “implied student” image offered by Rhapsode™. The technology requires the student to read, listen, and answer questions (alone) until they are sure of and know all the content, with a strong focus on factual knowledge. Such a focus is apparently difficult for some new students to reconcile with their ideas of being a nurse student.

Second, the students’ expectations with regard to an adaptive learning technology, such as Rhapsode, plays a big role. Some students framed the experience as the producers intended, that is, as a novel training experience substituting regular homework. Others expected it to be comparable to a book, test, or podcast, while others even compared it to a teacher. When expectations were met or they were positively surprised, the students accepted and adapted to the technology and collaborated without hesitation. Conversely, when the students’ expectations clashed with their experience, they often refused to collaborate and tried to hack their way out of the system. However, some students chose to collaborate with the technology despite their distaste, as they recognized the potential for learning outcomes and fought their way through.

Finally, the place of adaptive technology in the ecology of nurse education plays a significant indirect role in how it is received. Many of the issues reported in this article stem from an inadequate framing of the technology that prompted multiple attempts to redefine the situation by teachers and students alike, many of which ultimately clashed. Going forward we believe that redesigning how students are supposed to prepare in education should be taken into consideration alongside other higher-order educational choices, such as whether to use project-based learning, thematic learning, classes, cases, or scenarios.



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