The portfolio as a teaching/learning strategy in a dentistry course: students' perceptions

O portfólio como estratégia de ensino/aprendizagem no curso de odontologia: percepções dos alunos

El portafolio como estrategia de enseñanza/aprendizaje en el curso de odontología: percepciones de los estudiantes

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ABSTRACT
The use of portfolios in academic activities is used to document and reflect on learning. They allow for the organization of work, the assessment of progress and the demonstration of skills. Thus, encouraging self-assessment becomes a valuable tool for both students and educators. Therefore, this study aimed to investigate the perception of students of the dentistry course at a private university in southern Brazil regarding the use of the portfolio as a teaching/learning strategy. An exploratory, descriptive case study with a qualitative approach was conducted with a convenience sample of fourth semester dental students. A semi-structured interview was held with each participant individually. The answers were recorded and subsequently transcribed. The data were submitted to the content analysis method proposed by Bardin. The sample was composed of seven students (six women and one man). The mean age was 24 years old. The aspects perceived as the most influential in the construction of the portfolio were the importance of the professor guiding the work and motivating the students, the subjectivity of the process, which depends on the individual characteristics of each student, and the importance of sharing ideas with classmates. The method was considered challenging, as it demands self-expression and the capacity for critical, reflexive thought. All students discussed the potentialities of the method. Despite being considered a challenging method, the portfolio proved to be an effective teaching/learning strategy. The use of this method encouraged the search for knowledge in a continual, holistic process that better prepared the students for evaluations.

Keywords: Education in Dentistry. Skill-Based Education. Higher Education. Educational Evaluation.
os más influyentes na construcción do portafolio foram a importancia de o professor orientar o trabalho e motivar os alunos, a subjetividad do proceso, que depende das características individuales de cada alumno, e a importancia de compartir las ideias con los colegas. O método foi considerado desafiante, pois exige a autoexpresión e a capacidade de pensamento crítico e reflexivo. Todos os alumnos discutiram as potencialidades do método. A pesar de ser considerado un método desafiante, o portafolio revelou-se uma estratégia de ensino/aprendizagem eficaz. A utilización deste método incentivou a procura do conohecimiento em un proceso contínuo e holístico que melhor preparou os alumnos para as avaliações.


**RESUMEN**

El uso de portafolios en las actividades académicas sirve para documentar y reflexionar sobre el aprendizaje. Permiten organizar el trabajo, evaluar los progresos y demostrar las competencias. Así, el fomento de la autoevaluación se convierte en una herramienta valiosa tanto para los estudiantes como para los educadores. Por lo tanto, este estudio tuvo como objetivo investigar la percepción de los estudiantes del curso de odontología de una universidad privada del sur de Brasil sobre el uso del portafolio como estrategia de enseñanza/aprendizaje. Se realizó un estudio de caso exploratorio, descriptivo y con abordaje cualitativo, con una muestra de conveniencia de estudiantes de cuarto semestre de Odontología. Se realizó una entrevista semiestructurada a cada participante de forma individual. Las respuestas fueron grabadas y posteriormente transcritas. Los datos se sometieron al método de análisis de contenido propuesto por Bardin. La muestra estaba compuesta por siete estudiantes (seis mujeres y un hombre). La edad media era de 24 años. Los aspectos percibidos como más influyentes en la construcción del portafolio fueron la importancia de que el profesor oriente el trabajo y motive a los alumnos, la subjetividad del proceso, que depende de las características individuales de cada alumno, y la importancia de compartir ideas con los compañeros. El método se consideró un reto, ya que exige autoexpresión y capacidad de pensamiento crítico y reflexivo. Todos los alumnos hablaron de las potencialidades del método. A pesar de considerarse un método desafiante, el portafolio demostró ser una estrategia de enseñanza/aprendizaje eficaz. El uso de este método fomentó la búsqueda de conocimientos en un proceso contínuo y holístico que preparó mejor a los estudiantes para las evaluaciones.

1 INTRODUCTION

With recent technological and scientific advances in higher education, there is no longer any place in the teaching/learning experience for "knowing" as a decontextualized cluster of knowledge, learning as an incessant written repetition of the professor-student dialog, and teaching as the mere repetition of information. Allowing knowledge building to become static is one of the errors of the old teaching/learning model (Albino et al., 2008; Sandars, 2009). It is therefore necessary to rethink this process and reorient the goals of education and formative philosophy to reorganize the processes of teaching, learning, and evaluation.

In Brazil, the National Curriculum Guidelines (2002) for dentistry courses suggest broader-scoped thinking about health and state that the implementation of active teaching/learning processes is indispensable. The guidelines also stress the need for changes, with an emphasis on the more dynamic, independent participation of students as a way of integrating theory and practice (Conselho Nacional de Educação, 2002).

In light of these transformations in the teaching/learning process, the use of the portfolio has gained ground in higher education courses in the health field throughout the world (Goldie et al., 2007; Vernazza et al., 2011; Wakimoto; Lewis, 2014; Walton; Gardner; Alelsejuniene, 2016). This is an active method in which students can monitor and reflect on their personal development through the collection of evidence that they have constructed themselves in the form of documents, personal experiences, classroom experiences, papers, self-evaluations with continual critical-reflexive analysis and connections with day-to-day issues (Albino et al., 2008; Goldie et al., 2007).

However, there are some problems in the use of the portfolio as a teaching method related to the acceptance of the students, who often complain about the time this practice requires and report difficulties regarding the development of critical-reflexive skills. Thus, it is important to investigate the perceptions of students regarding the portfolio, since it is fundamental for educators and students engaged in the practice of this method to reach their goals (Walton; Gardner; Alelsejuniene, 2016; Driessen et al., 2005).
The present study aimed to investigate the perceptions of students in the dentistry course of the Franciscan University Center in the state of Rio Grande do Sul, Brazil regarding the use of the portfolio as a teaching/learning strategy.

2 METHODOLOGY

2.1 TYPE OF STUDY

An exploratory, descriptive, case study with a qualitative approach was conducted involving semi-structured interviews.

2.2 PARTICIPANTS

A convenience sample was used, consisting of students in the fourth semester of the dentistry course at a private university in southern Brazil. All participants agreed to participate by signing a statement of informed consent. The choice of class was because it was the first group to use this teaching/learning method. Professors in the field of public health observed the need to work with an active method to encourage reflection and knowledge-building in the students. Among the available active methods, the portfolio was chosen because it makes the student an active participant in his/her learning by promoting autonomy and creativity in the building of his/her knowledge.

The students recruited for the study were randomly selected using a simple lottery system. Students who were in the class but had not put together a portfolio due to failing the subject were excluded from the study. Considering the qualitative approach employed in this study, the criterion for the definition of the sample was non-numeric. The idea was to observe the phenomena from different points of view and perspectives. Therefore, data collection ceased when the saturation of the data (the time in which the discourses began to be repeated) was perceived (Minayo, 1999).
2.3 DATA COLLECTION

The interviews were conducted by a trained graduate student. The answers were recorded on audio and subsequently transcribed verbatim. The interviews were conducted using a semi-structured questionnaire with seven guided, open-ended questions drafted specifically for the present study. A questionnaire was also administered for the characterization of the students in terms of sex, age, marital status, schooling, parent's occupation, family income, and affinity with the course. Each student selected for the study was interviewed independently in a reserved room with a comfortable chair and the offer of water and coffee.

Each interview was scheduled in advance at times with the students were on campus and not interfering with their academic activities. The advantages of the interview method are the assurance that all items are answered, and the answers are given by the person who was selected to participate in the study as well as the determination of difficulties in understanding the data collection instrument (Luiz; Costa; Nanadovsky, 2008). The participants were differentiated by the letter I for the interviewee, followed by a number from 1 to 7 (I1 to I7). A pretest was performed with a graduate student before the main study to verify the viability of the data collection method.

2.4 ETHICAL ASPECTS

This study received approval from the Human Research Ethics Committee of the Franciscan University Center (process number: 2.245.966; certificate number: 74285317.6.0000.5306) by Resolution 466/12 of the Brazilian National Board of Health.

2.5 STATISTICAL ANALYSES

The discourses were submitted to content analysis using the method proposed by Bardin (Bardin, 2008). First, the interviews were transcribed
verbatim to facilitate the understanding of the context of each interviewee. In the pre-analysis phase, the data were analyzed individually. For content analysis, the data were coded; the transcriptions were submitted to an exhaustive reading and categorized through the identification of comparisons and connections in the discourses of the interviewees. The material resulting from these analyses was then interpreted.

3 RESULTS

The sample was composed of seven students (six women and one man). There were no refusals to participate. Mean age was 24 years (range: 21 to 27 years). The analysis revealed three categories. The first regarded aspects are perceived as the most influential in the construction of the portfolio. The second was the potentialities of the method and the third was the challenges faced when developing the portfolio.

In the category aspects perceived as the most influential in the construction of the portfolio, three sub-categories emerged. The first was the importance of the professor to guide the work. The participants stressed the importance of having the accompaniment of the professor as a motivator and guide during the construction of the portfolio:

Ah... I think it would be good, for instance, to have a day for the construction of the portfolio, you know, when the professor could show the student how it's done... 'you have to do it this way'; 'It should have this and this'... That would facilitate writing. After all, it's something new, isn't it? (I7)

The second sub-category identified was the subjectivity of the portfolio construction process. The participants stated that the methodological construction of this teaching/learning tool is directly influenced by the individual characteristics of the participants, as each student employs his/her uniqueness in the process:
[...] It's an issue of 'us', in my opinion; what I think about things, based on the theory that we have, [...] depending on the topic; it is very subjective, as it revolves around our expectations and the expectations of the professor. (I4)

The third sub-category was the importance of sharing ideas among classmates, which was considered significant in the sense of discovering the personal strategies of each individual when seeking new inspirations:

[...] uniting all the portfolios of the class in which you worked, because it's a subjective issue for each person; it's nice to know the opinion of others in the same group, to discuss things, develop new ideas, you know? (I4)

Regarding the potentialities of the method, the portfolio was described as a preparation tool for evaluations. The students reported that the construction of the portfolio assisted in the preparation for subsequent evaluations and served to address questions regarding the subject studied:

[...] I think what most affected me was that we made [the portfolio] before the test and the subject was on the test. It helped a lot [because] we had already covered it and questions came up that could be answered before the test. (I1)

Another potentiality was the use of the resource as a tool to encourage students to research, as the participants recognized the need for research and establishing their understanding of the subject more independently:

[...] I think that we develop a lot because it's something that makes us more independent, isn't it? You must do the research. The professor can guide you in a subject, but you have to research it by yourself, in a way, we develop [the skill] to research and write, especially write, you know? It makes us construct a line of reasoning. (I2)

The third potentiality reported was the possibility of performing a formative evaluation. The participants perceived the use of the portfolio as a positive point—as an evaluation method during its construction throughout the semester, with no restricted isolated assessments, as occurs on tests:
[...] because you don't get nervous making the portfolio. You're not under any pressure, you know? So, I think the portfolio is a way to evaluate the student. (I2)

Regarding the challenges of developing the portfolio, the students reported that it requires the student to express himself/herself. They stressed the challenge of the writing aspect – of placing their ideas on paper in a clear manner:

[...] people have more trouble; most of the time, people don't like writing. So, it ends up being hard for students because more is expected from you [...]. (E2)

The students also mentioned the challenge of developing the capacity for critical-reflexive thinking in the process of constructing the portfolio. They found it difficult to position themselves critically and not merely offer a description of the subject:

[...] being critical, observing the subject and resuming it... you need to quickly form a critical opinion, speak critically about the subject [...]. (I7)

4 DISCUSSION

The rigor of education in undergraduate courses in the health field often impedes students from performing a critical-reflexive analysis of who they are becoming from a longitudinal perspective. Moreover, the current focus on skills together with stress and burnout can lead to a reduction in empathy (Ahmed, 2018). This has driven the search for teaching tools, such as the portfolio, that can promote greater participation, autonomy, and the capacity for reflection among students during their academic education (Vernazza et al., 2011; Wakimoto; Lewis, 2014; Walton; Gardner; Alelsejuniene, 2016; Ahmed, 2018; Byiszewski; Fraser; Lochnan, 2018). However, it is important to monitor the teaching/learning process and how the method exerts an impact on the education of students. In the present study, three important categories emerged for understanding the meaning of the use of the portfolio. The students listed aspects perceived as the most influential in the construction of a portfolio, the potentialities of the strategy, and the challenges faced during its development, which led to
greater clarity regarding the process. These findings can also enable teaching staff and students to make it a more effective knowledge-building tool.

Understanding the perceptions of students regarding the use of the portfolio throughout their education has been the focus of previous studies (Walton; Gardner; Alelsejuniene, 2016; Ahmed, 2018; Gardner; Alelsejuniene, 2008; Buckley et al., 2009; Gadbury-Amyot et al., 2012; Ticha; Fakude, 2015) and is fundamental to ensuring the evaluation of the applicability and value of this method. Important data emerged in the present study, such as aspects perceived as influential in the construction of the portfolio, including the presence of the professor. There is a need for the educator to serve as a guide and motivator, encouraging students to (re)study the subjects presented as well as address their questions and doubts throughout the development of the work (Ferraz et al., 2016). When the professor takes on this role, the motivation of the students is maintained after the evaluation, regardless of the outcome (sufficient or insufficient), as the professor can instigate students to improve their performance (Ferraz et al., 2016) and encourage them to acquire self-reflection regarding who they are becoming in the longitudinal perspective and how they are constructing their professional identity (Cunningham et al., 2018).

Another point considered important in the construction of the portfolio was the subjectivity of the process. Students are not accustomed to the autonomy the method provides and often find it difficult to handle, as it gives them the freedom to search for information from different sources and build their personalized knowledge (Koole et al., 2013). The lack of a ready evaluation model, which is a characteristic of the portfolio, instigates students to reflect on their learning process (Cunningham et al., 2018). When coming directly from the student and supervised by the educator, decision-making generates benefits and better knowledge building (Forte et al., 2015; Tonni; Mora; Oliver, 2016).

The sharing of ideas with classmates was also considered an important aspect of the construction of the portfolio. This is significant, as it enables knowing the personal strategies of each individual and can assist in seeking new aspirations. Personal interactions among classmates enable students to identify important aspects that can motivate them to create an interactive community for
the exchange of practices, which favors the learning process (Wakimoto; Lewis, 2014; Tonni; Mora; Oliver, 2016). However, caution is required, as this need may also reflect the continued practice of traditional methods, which do not encourage autonomy and creativity.

In the present study, potentialities were identified in the use of the portfolio as a teaching/learning practice, such as assistance in preparing the students for evaluations, which, according to the students, enabled gradual knowledge building through autonomous study and a formative evaluation. Previous studies have also demonstrated the advantages of using the portfolio (Walton; Gardner; Alelsejuniene, 2016; Gardner; Aleksejuniene, 2008; Koole et al., 2013). In a study conducted at the Columbia University Vagelos College of Physicians and Surgeons involving 97 of the 132 first-year medical students, the use of the portfolio was found to promote an internal change, self-knowledge, and the capacity for reflection among the students as well as the construction of a holistic professional identity (Cunningham et al., 2018).

Using innovative active methods ensures that education is permeated with autonomy and creativity, by which students can create manners to solve situations (Cotta; Mendonça; Costa, 2011). Thus, the portfolio is described as a study tool for future evaluations, as its creation motivates the search for the solution to questions that arise regarding a given subject. With this method, the student's impressions can be transformed as he/she simplifies knowledge through its (re) building (Forte et al., 2015). Moreover, when students independently manage their knowledge, they understand the importance of self-guidance and discard the notion of the professor as the only person responsible for the conception of the subject (Wakimoto; Lewis, 2014).

The portfolio is also considered an evaluation tool (Cotta; Mendonça; Costa, 2011). In the present study, the students described the portfolio as a method for the continual evaluation of their learning that can replace classic evaluation methods, such as tests. They believe that such an evaluation is fairer and more effective. Similar findings have been described in previous studies (Wakimoto; Lewis, 2014; Forte et al., 2015).
A comparable study with a qualitative method involving semi-structured interviews with 16 dental students at the University of British Columbia in Canada described the feedback of students who used the online portfolio as a teaching-learning method (Gardner; Aleksejuniene, 2008). As occurred in the present investigation, the experience of the students was very satisfactory and the use of the portfolio encouraged the students to grow professionally, instigating them to think critically and combine knowledge acquired in theory with practice.

Regarding the challenges identified in the development of the portfolio, the students in the present study pointed out that the method requires them to express themselves clearly and develop the capacity for critical-reflexive thinking. These results may be related to the student's basic education, which was likely based on the classic rigid education model that does not stimulate these skills. Reflection encourages open, frank discussion in the classroom, improves the relationship between students and educators, provides an increase in general knowledge, awareness, and reflection, improves communication skills, which are fundamental to the dentist-patient relationship, leads to a higher level of professionalism as well as better performance and preparation for graduate school and strengthens self-confidence (Ahmed, 2018).

5 CONCLUSION

This study aimed to investigate the perceptions of students in the dentistry course regarding the use of the portfolio as a teaching/learning strategy. As a result, it was found that although considered a challenging method, the portfolio proved to be an effective teaching/learning strategy. Its use motivated the search for new information in a continual, holistic knowledge-building process, better preparing the students for evaluations and enabling the possibility of a formative evaluation.

The results of this study suggest the importance of implementing portfolios in the classrooms of higher education courses and the need for training for teachers on the main points for putting this type of assessment into practice. This study
highlights for both society and academia the need to discuss public education policies to implement the use of portfolios for student assessment in universities.

This study has limitations. Although qualitative studies using interviews play an important role in the literature, quantitative multicenter studies with significant samples are necessary to obtain an overview of student perceptions in the country. Furthermore, it is suggested that interventional studies be carried out to assess the real effect of portfolios on student learning and assessment when compared to traditional assessments so that educators can make the best possible decisions.
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