EFFECTS OF TWO SKILL-BELT MODALITIES ON FRACTION LEARNING FOR 10-YEAR-OLD STUDENTS*

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Abstract

Learning fractions is important in mathematics education. However, learners have difficulties with this notion. In an attempt to remedy the difficulties encountered by students, we investigate the effect of the modality of obtaining (individual or cooperative) skill belts on the learning of fractions. To our knowledge, the scientific literature offers little information on this topic. This research targets a public of 4th grade primary school learners in a school located in the French-speaking Belgium.

Key words: *Fraction; Skill belts; Learning; Mathematics; Difficulties.*

1. Introduction

According to Allal (2002), the notion of competence appeared in educational discourse about 20 years ago. This notion indirectly raises the question of the evaluation of skills, which is a subject of debate in education. The theme of "evaluation by competency" therefore seems to be a relevant research topic in view of current school concerns. However, it is important to realize that the term "competence" raises questions about its polysemic nature and its lack of clear definition. On the other hand, Merle (2012) points out that although assessment is often criticized, it is rooted in the mores and assessment by grading as we know it today has many disadvantages, such as the subjectivity of the correction and the negative effects on students' self-esteem and motivation. These effects can lead to a vicious circle, where a student who is considered to be underachieving can feel a dislike for school and reject it altogether.

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To avoid the negative consequences of evaluation by grade, one possible approach would be to emphasize the student's success and to play down failure. Fernand Oury's institutional pedagogy offers a response to this need. Indeed, this pedagogy sets up competency belts to evaluate student performance (Bertein, 2019). According to this principle, the student can decide, at the time he or she wishes, to pass the corresponding belt after completing one or more learning activities related to an academic skill. Only successful belts are retained, while other skills can be reworked later. This system is based on the respect of the rhythm of each student, on a dynamic of success, on mutual aid and autonomy. Assessment thus becomes a tool at the service of the student, and no longer a stress factor that devalues and demotivates students.

In his book, Khordoc (2021) points out that there is a strong link between skill belts and cooperation among students. Cooperative learning is defined as a learning situation where learners are grouped together and have learning goals that can only be achieved if all students in the group are successful in achieving theirs. Baudrit (2013) even mentions the principle of interdependence which means that a group project could fail if one of the group members does not achieve the learning goal.

Conceptually, cooperative learning can be defined as learning situations where learners are gathered in a group and have learning goals that can only be achieved if all students in the group manage to achieve theirs. Baudrit (2013), moreover, even mentions the principle of interdependence which means that a collective project could fail if one of the members of the group does not achieve the learning goal.

Based on these reflections, it is possible to ask how to administer skill belts to learners in cooperative learning. It might be more effective to offer a belt only if the whole group achieves the required competency. In order to measure the impact of such an arrangement on student performance, fraction learning seems to be the perfect opportunity. Rouche (1998) argues that fractions are one of the first and most important areas where disgust with mathematics develops. Lortie-Forgues *et al.* (2015) also emphasize the importance of fractions for success in mathematics as well as for many professions and add that difficulties with fractions affect children and adults alike. Carette *et al.* (2013) find that learning fractions poses a good number of challenges for students despite its importance in many mathematical areas. Could learning and assessing fraction skills using cooperative or individual skill belts help students reconcile with this subject that can create a distaste for mathematics?

2. Review of the literature

2.1. What is a skill?

The term "competence" is used in many fields without having a precise definition. However, 25 years ago, Perrenoud (1995) proposed a definition that is similar to the one used today. According to him, a competence is a set of high-level skills that require the integration of different cognitive resources to deal with complex situations. Knowledge should not be excluded because it is an essential element in the acquisition of a skill. In 2019, Manach and his colleagues also proposed a definition close to Perrenoud's, emphasizing that competence focuses on the individual who can act in a relevant way in a specific context using the resources available to him. In his book, Jonnaert (2017) distinguishes between the notions of knowledge and competence, explaining that knowledge constitutes competence and should therefore be assessed. However, it is more important to debate which knowledge is used for which competencies rather than distinguish between these two terms. Despite the different definitions that exist, competencies are generally considered to be a knowledge-action based on the effective use of a set of resources. The belts allow us to question the method of evaluation that would allow students to develop their skills, to progress and to use them in their daily lives.

2.2. Evaluation

Hadji (2015) explains that assessment consists of two basic mechanisms. The first is regulation, which identifies the elements of learning to guide the student toward mastery of the targeted skill or knowledge. This evaluation is based on the collection of information on the student's performance. Regulation thus makes it possible to adjust teaching according to the student's level in order to achieve the desired objective. The author also stresses the importance of clearly stating the teacher's expectations so that he or she can be aware of what has been acquired and what still needs to be worked on.

Institutional pedagogy has developed an evaluation system inspired by judo belts, where the learner can move from one colored belt to another according to the skills validated. This approach allows for different types of assessment. According to Benzakki's (2019) research, formative assessment takes place during training, allowing for belt passing or resumption of training if necessary. On the other hand, the summative evaluation is often considered as a sanction evaluation, which is not the case with skill belts. Indeed, the passage to the next belt validates the acquisition of the previous belt. If the learner fails, he or she can continue to train without losing what he or she has already acquired. Bertain (2019) tested skill belts to measure student engagement and analyze their impact on content retention in long-term memory. This study shows that skill belts increase learner motivation due to the positive idea of progress they engender. Using skill belts to assess provides students with the opportunity to manage their own assessment process through self-assessment. Self-assessment is implemented through self-correcting practice sheets, which ask the student to decide for themselves when they feel able to validate the skill to move on to the next level. This allows for more effective differentiation, as the learner knows his or her strengths and weaknesses, making it easier for the teacher to target learners' difficulties. In addition, faster learners can advance in belts that require a higher level of proficiency. According to Berthou and Natanson (2014), the purpose of skill belts is not to assess, but rather to allow students to have a look at their progress, how they are developing, and what they still need to work on to advance through the belts. Bertein (2019) agrees with these authors and asserts that belt-based assessment provides students with the opportunity to learn at their own pace and be assessed at the time they feel ready. This allows the student to decide, upon completion of one or more learnings of an academic skill, to take the corresponding belt. Only successful belts are retained. For the others, the student can continue to train to acquire them later. This approach respects each student's pace, encourages success, mutual aid and autonomy, and allows for long-term improvement in knowledge and skills, while increasing each student's commitment to work. Students express that they love using this tool and experience a sense of well-being and desire to learn with the skill belts, according to Benzakki (2019).

2.3. Cooperation

Today's educational institutions must not only teach students how to learn, but also teach them cooperation so that they can apply it to their learning. Cooperative education, of which institutional education is an integral part, focuses on this concern. In this type of education, teachers need to empower students to organize their work and tasks so that their learning takes place in a micro-society where they can share, communicate and resolve conflicts. However, the teacher retains major roles, such as managing the functioning of the classroom and mediating between students (Capitanescu Benetti, 2012).

Skill belts also fit into this cooperative logic, according to Connac (2017), by encouraging mutual aid, expert help, and autonomy. Each student has a role to play based on his or her level in an area, and must acquire the previous skills in order to move to the next belt. Tutoring is also encouraged, where expert students can help others who are struggling in their skill area. This allows the struggling student to have a more accessible explanation and reinforces the learning of the expert student. Thus, belts allow for roles to be assigned to everyone, while allowing students to manage independent practice time themselves. Several researchers have long recognized the benefits of working cooperatively in groups of students (Plante, 2012). They believe that group learning allows students to learn from each other, as opposed to individualistic learning where students learn alone without impacting others. Although Bernardin (2014) emphasizes that the individuation process is necessary for the development of subject autonomy and that personal involvement is essential for the learner's progress, many authors believe that cooperative learning is more effective than individualistic learning because it requires more complex cognitive strategies from students (Toczek-Capelle, 2003). Cooperative learning has positive effects not only on students' achievement, but also on their socialization, motivation, and personal development (Reverdy, 2016). Indeed, this type of learning increases learners' perception of competence and sense of self-efficacy (Plante, 2012; Topping *et al.,* 2011). Both of these are variables that stimulate motivation in the learner and promote engagement and persistence in more complex academic tasks (Bandura, 1999). In cooperative settings, learners also develop higher self-esteem as social relationships among peers are more positive (Bertucci *et al.,* 2010; Roseth *et al.,* 2008).

2.4. The notion of fraction

According to Giroux (2013), the fraction is an essential concept in students' schooling, as it represents an important transition from elementary to middle school. As El-Assadi (2008) states, the fraction is used in many areas of mathematics, such as proportionality, probability, statistics, homothety and trigonometry. However, this notion goes beyond mathematics and is also used in the physical sciences, chemistry and biology. Yet, fractions seem to be an important issue for teachers, as they present many barriers to student learning, as noted by Carette and colleagues (2009). The concept of a fraction can be defined more broadly as a relationship between two quantities and is not limited to the fractional form. In addition, students' difficulty in mastering the concept of a fraction comes from its multiple meanings.

2.5. Difficulties with fractions

Despite the common use of fractions in our daily lives, learning them remains a challenge for elementary school students (Carette *et al.,* 2013). Their research has shown that the "part-whole" fraction is most frequently used in learning and representing fractions in elementary school, which limits students' perception to a stereotypical conception of the fraction. Coquin and Camos (2006) agree with this observation, stating that students fail to view the fraction as a number because their representation of the fraction is limited to the "piece of pie." Thus, the construction of the fraction concept in elementary students must go beyond this simple "slice-and-pie" representation (Mills, 2016). Furthermore, the "natural number bias" represents a major barrier in learning fractions (Ni & Zhou, 2005). This bias highlights the inappropriate use of representations and procedures that have been effective in other situations involving natural numbers. However, natural numbers and rational numbers are mathematically distinct, and these differences can lead learners to make errors (Carette *et al.,* 2009).

3. Background of the research

As a teacher, it is crucial to reflect on the issue of assessing student competencies. Grading, as it is currently practiced, has many drawbacks, including the subjectivity of grading, negative effects on self-esteem and motivation of students. As a result, students who are perceived as underperforming can develop a distaste for school, which can lead them into a vicious cycle (Merle, 2012). In this context, it is essential to seek alternatives to traditional assessment. In addition, it is important to note that fourth grade students' understanding and use of fractions is often problematic. This difficulty was highlighted by the work of Carette *et al.* (2013), who pointed out that although fractions are ubiquitous in our daily lives, they remain a stumbling block for elementary school students. To address both of these issues, we implemented an instructional device to evaluate the effectiveness of a new assessment system for improving students' understanding of fractions: skill belts. By developing mutual aid and cooperation among students (Khordoc, 2021), the skill belts are used in two ways to evaluate their effectiveness and students' feelings about the mathematical task. One group will face an individual assessment system, while the other group will participate in a cooperative assessment system.

After reviewing the scientific literature and observing the students, we ask the question of whether the modality of obtaining the skill belts (individual or cooperative) has an effect on students' progress in fraction.

Therefore, we formulate the following hypothesis: "Primary 4 students who received the cooperative skill belt attainment modality will record higher progression in fractions than learners who received the individual attainment modality." This hypothesis is based on our scientific research, which shows that cooperative learning promotes student performance by requiring higher-level cognitive strategies. Students assimilate concepts and then exchange them with other group members (Toczek-Capelle, 2003), which improves their fraction skills. Our hypothesis is supported by many authors who acknowledge the benefits of cooperative work for learning, where students learn from each other, as opposed to individualistic learning where students work alone without impacting others (Plante, 2012).

4. Methodology

Our experimental design thus takes into account an independent variable: the modality of obtaining the belts. It is a pre- and post-experimental observation design. Our experimental approach is based on two dependent variables: the individual progression of skills and the individual perception of the mathematical task.

The sample used for this research is described as casual. Our experimental design is composed of two groups of subjects named "group A" and "group B". The sample consists of 44 subjects. Concerning the progression of the subjects, a calculation of the relative gain is necessary to objectify this evolution (D'Hainaut, 1975). Each of the variables is the subject of one or more research questions.

Q1. Does the fraction skills belt assessment have an effect on student progress in this area?

Q2. Does learner progression in fraction differ depending on the skill belt modality (individual or cooperative) implemented?

Q3. Do learners' perceptions of the mathematical task of skill belts differ depending on the skill belt mode (individual or cooperative) implemented?

Q4. Is there a correlation between learners' perceptions of each other, between learners' perceptions and relative gains, and between learners' perceptions and posttest scores?

5. Teaching scenario

5.1. Measuring instruments: pre-test and post-test

Even before the implementation of the pedagogical device, all the subjects are confronted with a test in order to collect metric data on the initial level of each student in fractions. The pre-test consists of 13 questions, each referring to a skill worked on in the framework of the learning progression by skill belts. The teacher does not read the questions with the learners and the learners are not allowed any tools (no calculator). The post-test is identical to the pre-test. The only difference between the two tests is the order of the questions. The procedures for taking the test are the same as for the pre-test.

Beyond the cognitive processes mobilized by the learner, other factors can influence student learning, such as motivation and emotional state. Indeed, these two factors impact learner performance, activity level, and persistence (Cosnefroy, 2011; Marcoux, 2014). Therefore, to assess whether the skill belt modality affects students' perception of the mathematical task, we decided to administer a perception test to students after the device was administered. This test aims to measure three indicators of student motivation. The first indicator is the feeling of competence, which reflects the student's perception of his or her own ability to accomplish a task. The second indicator is task attractiveness, which is the interest and enjoyment of the task by the student. Finally, the third indicator is fear of failure, which stems from the learner's anxious thoughts and anticipation of the mistakes he or she might make on the task at hand (Marcoux, 2014).

5.2. Educational device

To evaluate the impact of skill belts, whether individual or cooperative, on subjects' individual performance, we built a pedagogical tool consisting of four belt levels: white, yellow, orange and green. Each part is itself divided into 3 key skills to be acquired in order to obtain the corresponding belt. We are really in a progression process where the concepts addressed become more complex from belt to belt. Thus, as Khordoc (2021) explains, the notions acquired in the previous belts are also used in the new belt. This is the richness of the tool: the concepts covered are not forgotten after the assessment but are constantly called upon during the learning process. New learning is therefore built on a solid foundation. For each belt and each skill, a pedagogical device has been created including for each skill: a summary, 3 training sheets (EA, EB, EC), 3 assessments (B1, B2, B3) and for the belts: 2 final validation assessments (EA, EB).

EA	Ceinture blanche	1. Situer une fraction sur une droite graduée						2. Représenter et utiliser la fraction d'une forme ou d'une collection						3. Lire les fractions de manière correcte					
EB	Le …… / …… / ……	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**
EA	Ceinture jaune	1. Comparer une fraction à l'unité						2. Encadrer la fraction par 2 nombres entiers consécutifs						3. Représenter et utiliser la fractions d'un nombre					
EB	Le …… / …… / ……	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**
EA	Ceinture orange	1. Représenter et utiliser la fraction quotient						2. Comparer des fractions (numérateurs ou dénominateurs communs)						3. Reconnaitre et trouver des fractions équivalentes					
EB	Le …… / …… / ……	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**
EA	Ceinture verte	1. Rendre une fraction irréductible						2. Transformer une fraction en nombre décimal						3. Utiliser la fraction pourcentage					
EB	Le …… / …… / ……	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**	EA	EB	EC	**B1**	**B2**	**B3**

Figure 1. Belt progression

Pedagogical choices were made to build the tool based on the survey in the scientific literature. The choice to use varied situations involving all representations of the fraction has been advocated by several authors, including Coquin and Camos (2006), Carette *et al.* (2009), Mills (2016), and Houle (2016). Learning begins with the representation of a fraction on a graduated line, which allows for conceptual reorganization so that learners recognize rational numbers as a new category of numbers with their own properties and rules, as Carette *et al.* (2009) point out. The tool also emphasizes manipulation before moving on to other levels of abstraction in discovery lessons, as Picard (2015) argues that these concrete representations are essential for learners to conceptualize fractions. The experimentation is taking place over a period of 8 weeks (February to April 2022). It began on February 1, 2022 with the pretest and ended on March 31, 2022 with the posttest. The discovery lessons, 10 in number, began on February 2, 2022. In order to respect the rhythm of each student, the number of work sessions is not limited. There are periods dedicated solely to skill belt work. However, once a student completes an assignment, he/she can continue to progress through the skill belts. Not all worksheets and assessments need to be completed. If a student feels ready to take the first assessment after one practice sheet and passes the first assessment, then he or she does not have to complete practices B and C or assessments 2 and 3. This is because skill belts allow each student to follow a personalized path (Khordoc, 2021).

6. Results

This part presents the different treatments carried out on the data we have collected. The objective is to answer our research questions formulated previously. We are interested in the influence of the modalities of obtaining the belts on the progress of the learners who took part in our experiment. To this end, we use the values of relative gains and relative losses. Moreover, D'Hainaut (1975) considers that learning has occurred from a relative gain of 30%. All of our analyses have been carried out according to a descriptive component, in addition to an inferential component where we opt for a level of significance, α, admitted to be around 5%. In other words, we will be able to reject the null hypothesis as soon as the probability found on our sample, ρ, is less than α, i.e., $p \leq 0.05$. To calculate these results, we used the Jasp software. A Mann-Whitney test was performed to ensure that the two groups of subjects were not statistically different (W=269.5; p=0.514).

6.1. Overall impact of the educational system

We wonder about the overall effect of our device on the subjects' progress. By observing in a descriptive way, we notice a significant difference between the average of the pre-test (4.09) and the average of the post-test (10.47). This variation corresponds to an average gross gain of 64.38%. Since this gain is greater than 30%, we can conclude that there has been a real learning process. A Student's t-test for paired samples indicates that the fraction skills belts have a positive impact on students' performance in this area (t = -13.15; p = <.001).

Table 1. Descriptive analysis of the overall impact of the system

	Pre-test	Post-test
Average over 14 (m)	4.091	10.48

6.2. Individual learner progress

We proceed to an analysis of the progress of the learners who followed our pedagogical scenario, by measuring the ratio between the real gain (observed progress) and the maximum gain (possible progress) for the two groups of subjects according to the modalities of obtaining the skills belt (individual or cooperative) implemented.

Table 2. Descriptive analysis of individual learner progress

	Individual modality	Cooperative modality
Average relative gain (%)	60.87	63.24

Table 2 shows a slightly higher gain for the cooperative belt group. A Student's t-test for independent samples shows that there is no significant difference between the means of the relative gains of these two groups ($t = -0.300$; $p = 0.766$). We can therefore conclude that the modality of obtaining the skills belt, whether individual or cooperative, does not affect students' progress in fractions.

6.3. Learners' perception of the mathematical task according to the mode of obtaining the skills belt

If we look at the averages obtained for the feeling of competence, we find almost identical averages for the first group (m=3.028) and for the second groype (m=2.762). In fact, these two averages are separated by less than one point. With regard to the fear of failure, we observe a higher average for the group with the cooperative procurement modality (m=2.909). The students belonging to the group with the cooperative mo-dality seem to have more fear of failure. Finally, the data obtained from the descriptive analysis of task attractiveness show us almost equivalent means for both groups (respectively, m=3.176 and m=3.364).

Table 3. Descriptive analysis of the means obtained for each dimension for each group

	Sense of competence		Fear of failure		Attraction to the task	
	Individual modality	Cooperative modality	Individual modality	Cooperative modality	Individual modality	Cooperative modality
Moyenne sur 5 (m)	3.028	2.762	1.931	2.909	3.176	3.364

Inferentially, there was a very highly significant difference in the perceived sense of fear between Group A and Group B (W = 99.00; p <.001). This difference was also marked on the descriptive level. Thus, we find that the group with the cooperative modality appears to be more afraid of failure than the group with the individual achievement modality (See Table 4).

Table 4. Mann-Whitney test to compare the means of each group for perceptions

	W	*p*
Sense of competence	300.00	0.173
Fear of failure	99.00	<.001
Attraction to the task	204.5	0.391

6.4. Links between posttest results, progression and perception indicators

For this last part, we will analyze the correlation between posttest scores, differences in students' perceptions of the activity (sense of competence, attraction to the task, and fear of failure), and learning gains for all groups combined.

Table 5. Pearson correlation on posttest scores, relative earnings and perceptions

	r	*p*
Posttest - Sense of competence	0.506	<.001
Posttest - Fear of failure	-0.310	0.041
Posttest - Attraction to the task	0.534	<.001
Relative gain - Sense of competence	0.552	<.001
Relative gain - Attraction to task	0.427	0.004

Before analysing the correlation values, it is important to specify that only significant results were retained for the above table. The reading of the table allows us to observe a correlation between the posttest results and the three indicators of perception of the mathematical task. There is a positive correlation between the results of the posttest and the feeling of competence (r=0.506; p=<.001) as well as the attraction for the task (r=0.534: p=<.001). This means that the more learners have a sense of competence and attraction to the task, the higher the posttest scores. The correlation between posttest scores and fear of failure is negative (r=-0.310; p=0.041). Therefore, we can say that the more students are afraid of failure, the lower the posttest scores. Then, concerning the relative gains, a positive correlation exists between these and the feeling of competence (r=0.552; p=<.001) as well as the attractiveness for the task (r=0.427; p=0.004). This makes it possible to affirm that the more subjects express a feeling of competence and an attraction for the task, the higher their progression.

7. Discussion

Using skill belts for assessment, which allows for both formative and summative assessment, offers an alternative to the negative perception students often have of assessment (Benzakki, 2019). Additionally, it allows learners to monitor their progress, development, and what they still need to work on to advance in the belts (Berthou & Na-tanson, 2014). According to Bertein (2019), this approach can improve knowledge and skills in the long run, as assessment becomes a tool rather than a stressor that devalues and demotivates students. Our study fully supports this position. We found that the pedagogical device had a real effect on learners' progress. Based on our results, it is possible to conclude that the use of skill-belt assessment for fractions has a beneficial effect on student achievement in this subject. In addition to the skill belt assessment, the way fractions are taught may also play an important role in this significant improvement. In designing the tool, we were mindful of the difficulties in learning fractions identified in the scientific literature, as well as the guidance it offers. Therefore, in line with the recommendations of Coquin and Camos (2006), Carette *et al.* (2009), Mills (2016), and Houle (2016), the tool uses a variety of situations involving all fraction representations. This approach allows students to develop a more complete understanding of fractions, one that is no longer limited to the simple notion of parts of a whole, and perhaps gives them a better understanding of the properties of rational numbers.

Skill belts involve another factor that can influence student success: cooperation. This is present in student learning because when a student earns a belt, he or she becomes an expert in the skill area and can help others who encounter difficulties (Connac, 2017). As some authors indicate (Toczek-Capelle, 2003; Windschitl, 1999), this requires students to use higher-level cognitive strategies as they assimilate the concepts in order to share them with others in the group afterwards. Thus, learners are more successful than with a more individualistic approach. We could also relate these observations to the results of our study. The cooperative approach seems to allow for greater progress than individual achievement. However, it was not possible to confirm this observation inferentially.

Students' perception of the mathematical task is divided by Marcoux (2014) into three indicators: sense of competence, attraction to the task, and fear of failure. These are, according to the author, factors that influence students' motivation and thus their level of activity and perseverance. We then wanted to test the influence of the skills belts on these indicators in order to determine whether there was a difference according to the individual and group evaluation modality. A significant difference exists between the two groups for fear of failure. When examining the averages of each group, it is found that the group with the cooperative obtaining of the belts presents a greater fear of failure than the group with the individual obtaining of the belts. Thus, it seems that a negative effect appears in the case of cooperation. This fear of failure may be associated with the responsibility that each student has in the success of the group. Indeed, in the cooperative group, in order to progress to the next belt, all students must have acquired the skills of the previous belt. This responsibility can become a source of stress for learners, meaning that a failure on their part could also hinder the progress of other students in achieving the skill belts. Skill belts, whether assessed individually or cooperatively, have a positive effect on learners' sense of competence and interest in the task. According to Benzakki (2019), this approach avoids the pejorative image of assessment by validating skill acquisition by moving to the next belt. If a learner fails, he or she has the opportunity to continue practicing before retaking the assessment. This approach leads to a positive perception of progress and increases learner motivation (Bertein, 2019). Although the scientific literature supports the positive effects of cooperative learning on learners' motivation, personal development, perception of competence, and sense of self-efficacy (Reverdy, 2016; Plante, 2012; Topping *et al.,* 2011), no differences were observed in this study between individual and cooperative skill belts.

The results of the analysis indicate that learners with a high sense of competence and high motivation toward the task have higher post-test scores and show greater progression. This observation could be attributed to the skill belt assessment method that allows failed learners to continue practicing without losing motivation (Benzakki, 2019). Furthermore, according to Bertein (2019), the benefits of the skill belt method, such as self-assessment, the positive idea of progress, and learning tailored to each student, increase students' engagement with the task and improve their performance.

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