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Imagination and improving individual skills through experiential learning

ABSTRACT

This research addresses the implementation of strategies to promote individualization in the education of future elementary school teachers. It is a comparison of the results obtained by students under three different working conditions in terms of the type of experiential learning and the type of imagination used. They produced three artworks: one with neutral information, one adapted to each learning style, and finally one that ignored it. Analysis of the works showed significant differences between non-individual and individual treatment. The experience helped to develop strategies to improve individual skills in a creative way, taking into account the positive and negative characteristics of each student.

KEYWORDS: Experience Learning Styles, Learning Strategies, Creativity, Imagination, Professional Training

1. Introduction

One of the general goals of our research has been to find answers to critics of experiential learning who claim that it is a reactive form of learning, that it precludes the possibility of making new connections, and that it often seems to emphasize the content of the problem more than the students trying to solve it[2].

Criticisms of experiential learning also focus on four areas: that it requires specific didactic devices and student experience. Failure to address these elements raises questions about the effectiveness of the learning[3]. Other critics

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[2] T. DICKSON, *Criticisms of Kolb*, 2000, <https://www.jiscmail.ac.uk/cgi-bin/wa-jisc.exe?A2=ind00&L=OUTRES&O=D&P=188605>. C. LOYNES, *Criticisms of Kolb*, 2000, <http://www.jiscmail.ac.uk.>.

[3] M. PIJL ZIEBER, *History, Philosophy and Criticisms of Problem Based Learning in Adult Education.* PBL in Adult Education 4, University of Calgary, 2006. L. PAGANDER, J. READ, *Is Problem-Based*

contend that minimal guidance during instruction does not work[4]. On the other hand, emerging research provides compelling evidence that experiential learning is an effective strategy for all students – including the historically marginalized[5].

The critics have no basis in art education, the subject in which we conducted our research, and probably in other subjects as well. They are general and ignore the individualization of teaching and learning that is required in today's globalized education. On the one hand, we should take into account the individuality of the student and the teacher, based on the specific characteristics of teachers and students: experiential learning styles, expression styles, imagination styles, psycho-physical abilities, teaching styles, cultural base, material context of the educational process, even the number of students and their gender could be considered. On the other hand, it is important to consider the didactic aspects of the educational process: different teaching methods, preference for three-dimensional or two-dimensional artworks, preference for certain art materials, preference for certain artistic motifs, etc. Many of the critics address elements embedded in the complex process of art education.

Experience has shown us that experiential learning is a successful methodological strategy for achieving goals such as activating emotional functions and recognizing different aspects of a problem, as well as improving the ability to generate ideas in students' artistic activities. This method allows students to develop critical and self-critical judgment in relation to the challenges posed by the exercises or tasks. Likewise, the cognitive development influences the emotional, social and esthetic development, regardless of the technology used to carry out the projects. In this way, the teaching process follows three inseparable phases: presentation of the problem, proposal of the solution, and evaluation of the results.

Reflecting on these ideas, we sought to implement strategies that promote the individualization of learning processes and contexts in the training of future elementary teachers, taking into account the different experiential learning styles of students, with the aim of developing personal independence and creativity in dealing with problems. Upon completion of their master's degree, students will teach all elementary school subjects, including art education, from first through fifth grade.

Learning (PBL) An Effective Teaching Method? Research Institutionen för Kultur och Kommunikation, Linköping, 2014, <https://www.diva-portal.org/smash/get/diva2:726932/FULLTEXT01.pdf.>.

[4] P.A. KIRSCHNER *et al.*, *Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching,* Educational Psychologist, vol. 41, pp. 75-86, 2010, <https://doi.org/10.1207/s15326985ep4102_1>.

[5] Y. TERADA, *Two new gold-standard studies provide compelling evidence that project-based learning is an effective strategy for all students–including historically marginalized ones*, 2021, <https://www.edutopia.org/article/new-research-makes-powerful-case-pbl>.

2. *The creative process of art education*

The criteria for describing creative practices become a far-reaching question. Indeed, the work of art produced is the basis for an accurate description of the creative process that produced it. It is the product of a dialectical process that combines the engagement of the teacher and the engagement of the student.

This work strategy also opens up contradictions between different individual experiences, goals and established methods for achieving them, the traditional meaning and mechanisms of motivation and personal commitment throughout the process. It questions the position of each individual and promotes self-reflection to connect cognitive and emotional aspects with action. It is also important to consider the social aspects of the teaching and learning process when we promote individualization and its didactic implications.

It is particularly important to emphasize that imagination and creativity in art education are focused on both processes and final products. In this way, it is possible to take into account the different attitudes, interests, and inclinations of the various actors in the pedagogical process.

One goal of experiential learning is to promote the application of concepts and skills learned in the classroom to real-world situations[6]. However, in order to acquire the knowledge and ability to learn effectively in any learning situation or problem, the student must know both his/her strengths and the areas in which he/she is not as effective. When he/she is aware of this, he/she is in a much more effective position to choose strategies that will lead to a successful outcome and to develop the areas in which he/she is weaker, with the goal of expanding the range of possibilities from which he/she can learn. Students sometimes find that their learning is blocked for one or more reasons. The factors that can be disruptive vary from student to student. Some possibilities are listed below: factors related to perception, when the student cannot identify the problem or task; culture, when the student feels constrained by the cultural context and associated expectations; emotions, when the student feels fear or uncertainty; motivation, when the student is unwilling to take risks. Cognitive factors may also play a role, depending on the nature of previous learning experiences; intellectual factors, if the student has a limited learning style or underdeveloped learning skills; expressive factors, if he or she has poor communication skills; situational factors, such as location, time, or an unfavorable environment.

Differences among individuals may reflect differences in cognitive capacity, but they may also reflect differences in the use of different strategies. People develop strategies that help them solve complex deductions. Different people

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[6] M. CHORAZY, K. KLINEDINST, *Learn by Doing: A Model for Incorporating High-Impact Experiential Learning into an Undergraduate Public Health Curriculum*, 2019, <https://pubmed.ncbi.nlm.nih.gov/30863743/, doi:10.3389/fpubh.2019.00031>.

develop different strategies, and their strategies are reflected in their reasoning[7].

The same could be applied to imagination. «Imagination is the ability to form mental images, phonological passages, analogies, or narratives of something we do not perceive with our senses. Imagination is a manifestation of our memory and allows us to question our past and construct hypothetical future scenarios that do not yet exist but could»[8].

Imagination also gives us the ability to see things from other perspectives. Imagination expands our experiences and thoughts and allows for the personal construction of a worldview that reduces our sense of uncertainty. In this way, our imagination fills in the gaps in our knowledge and enables us to create mental maps that make sense of the ambiguities of situations where we lack information, which is an important function of our memory management. This partly explains why people react differently to what they see, because they interpret it differently based on their different prior knowledge and experiences[9].

Imagination can also be usefully expressed in terms of different 'basic abilities' that remain constant across all modes of understanding. The purpose of these faculties, their evolutionary function, is to help us 'grasp' hidden forms of order and unrealized possibilities in the world.

Some types of imagination are to be emphasized regarding the artistic learning process: effective imagination combines information to synergize new concepts and ideas; intellectual or constructive imagination is used when we develop hypotheses from various pieces of information or think about various issues of meaning. Strategic imagination deals with the vision of 'what could be', with the ability to identify and evaluate possibilities, translating them into mental scenarios and emotional imagination deals with the manifestation of emotional dispositions and their expansion into emotional scenarios. Although any categorization is likely to be somewhat arbitrary, these skills, taken together, seem to cover most of the tools needed in the process of art education.

In order to define what skills students should develop to gain independence in accomplishing various tasks, especially those aspects that their individual learning styles neglect, we have tried to define useful operational resources when it comes to solving problems comparable to those they will find in life work.

With all these elements as motivation for the research, we have tried to define procedures that take into account individual learning styles and creative strategies through students' experiences as a starting point[10].

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[7] R.M.J. BYRNE, *The Rational Imagination – How People Create Alternatives to Reality*, The MIT Press, Cambridge, MA, 2005, p. 189.

[8] M. HUNTER, *Opportunity, Strategy and Entrepreneurship,* Nova Science Pub Inc, New York, 2012, pp. 46-49.

[9] *Ibid.*

[10] A. KOLB, D. KOLB, *Learning styles and learning spaces: Enhancing experiential learning at higher education,* Academy of Management Learning and Education, vol. 4, 2, 2005, pp. 193-212. D.

3. *Experimental learning styles and imagination*

According to Kolb[11] learning occurs in two phases: perception, which involves taking in information, and processing, which involves storing and understanding information. There are different ways or modalities in which students perceive and process information. They may do so concretely, such as by touching, feeling, seeing, or hearing, or abstractly, by creating mental, visual, or conceptual models. Processing perceived information is the next step. Students process information through active experimentation by doing, manipulating, or using the information and thinking about it. Imagination plays a special role in this step. Students tend to use different types of imagination depending on how they perceive and process the information.

Based on these considerations, Kolb argues that learning requires the possession of four different skills: skills for concrete experience, skills for reflective observation, skills for abstract conceptualization, and skills for active experimentation. Few of us come close to the ideal and possess all of these skills. Most of us tend to develop a stronger orientation toward one of these four poles. The author has developed an inventory of experiential learning styles to place students on a line between concrete experience and abstract concept formation and between active experimentation and reflective observation.

Convergent or pragmatic is the person who moves between abstract concept formation and active experimentation. Convergent style learners are interested in testing ideas, theories, and techniques to see if they work in practice. They are strong in the practical application of ideas. For this reason, they use effective imagination, which connects information to synergize new concepts and ideas, and constructive imagination, which is used when developing hypotheses from different pieces of information or thinking about different questions of meaning. They are on the lookout for new ideas and take the first opportunity to experiment confidently with ideas they like. They tend to be impatient when it comes to open discussions. They are essentially down-to-earth, grounded people who like to make practical decisions and solve problems. They approach problems and opportunities as if they were a challenge. Convergent learn less effectively when they cannot derive immediate benefits or rewards from the activity and the learning events or their organizers seem unrealistic. Convergent learn better when there is an obvious connection between the topic and their current work. They can focus on hypo deductive thinking about specific pro-

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Kolb, K. Peterson, *How you learn is how you live: Using nine ways of learning to transform your life,* Berrett-Koehler Publishers, Inc., Williston, 2017. G.E. Pickworth, W.J. Schoeman, *The Psychometric Properties of the Learning Style Inventory and the Learning Style Questionnaire: Two Normative Measures of Learning Styles,* South African journal of Psychology, 2000, <https://doi.org/10.1177/008124630003000206>.

[11] D. Kolb, *Experiential Learning: Experience as the Source of Learning and Development,* Cloth Prentice-Hall, New York, 1985. A. Baker et al., *Conversational learning: An experiential Approach to Knowledge Creation,* Berrett-Koehler Publishers, Inc., Williston, 2002.

blems. They like to be exposed to clearly practical techniques or processes that are immediately relevant and that they are likely to be able to implement.

Divergent or reflective is the student who moves between concrete experience and reflective observation. Divergent like to take a step back to think about experiences and look at them from many different perspectives. They gather data, both first-hand and from others, and prefer to analyze and reflect on it thoroughly, looking at it from different angles before coming to final conclusions. These are deferred as long as possible. Its philosophy is to proceed cautiously. They make the information their own. They enjoy watching other people in action and prefer to keep a low profile in meetings and discussions. They appear somewhat detached and casual. When they act, they do so from a broad perspective that includes the past as well as the present and the observations of others as well as their own. They have a great imagination. They are good at developing ideas and looking at things from different perspectives. They tend to have strategic imagination, which is concerned with envisioning multiple possibilities, i.e., the ability to identify and evaluate opportunities by turning them into mental scenarios, and emotional imagination, which is concerned with manifesting emotional dispositions and expanding them into emotional components of a task. Divergent learners are less likely to learn when they are pushed to do things without enough data or time to plan, or when they are asked to take shortcuts or do superficial work. Divergent learners learn best in activities where they can step aside, listen, and observe. They want the opportunity to gather information and think about it before making a comment or taking action. They like to go over the data they have gathered several times to solve a problem.

The accommodative or activist student moves from concrete experiences to active experimentation. Accommodative students engage fully in new experiences, without preconceived notions. Immediate experiences satisfy them. They are open-minded, not skeptical, and this leads them to be excited about anything new. Once the thrill of an activity has worn off, they are busy looking for the next activity. They tend to enjoy the challenge of new experiences, but become bored with the implementation and consolidation of longer-term projects. They are sociable people who constantly interact with others and try to be the center of attention in all activities. Accommodative people solve problems intuitively; they do not want to learn through passive activities such as reading or listening to lectures, especially when concepts or theories are involved. They dislike solitary work, repetitive tasks, situations that require detailed preparation, and being asked to review their learning and performance. Accommodative people are more likely to learn from new experiences and perform well when it is necessary to respond to immediate circumstances. They tend to have an emotional imagination, concerned with the manifestation of emotional dispositions and their immediate translation into emotional scenarios, and an intellectual imagination, deriving hypotheses from various pieces of information or thinking about various issues of meaning. They like relatively brief learning activities in the here and now, such as role-playing or competitive team exercises. They also prefer technical tasks.

The assimilator or theorist is the student who moves between abstract conceptualization and reflective observation. Assimilators like to analyze and synthesize. They assimilate and transform disparate facts and observations into coherent logical theories. They are masters of inductive reasoning. Their philosophy values rationality and logic above all else. They approach problems vertically and step by step. They tend to be perfectionists who do not rest until concepts no longer fit into a rational scheme. They are interested in basic assumptions, principles, theories, models, and systems thinking. They primarily use strategic imagination, the ability to identify and evaluate opportunities by translating them into mental scenarios and theories. They use effective imagination, combining information to synergize new concepts and ideas. They tend to be detached and analytical, leaning toward rational objectivity. They are uncomfortable with subjective judgments, ambiguity, lateral thinking, and anything frivolous. Practicality is not important to them. Assimilators learn best when they are offered a system, model, concept, or theory, even if the application is not clear and the ideas are far removed from current reality. They prefer abstract ideas and like to work in structured situations with a clear goal. They prefer to explore associations and connections, question assumptions, and analyze reasons in order to generalize. They like to be challenged intellectually. Assimilators have difficulty learning when they are asked to do something without a clear goal, when activities are unstructured and ambiguous, and when emotions are prominent. They are also ineffective when given tasks that lack depth and when data are not available to support the topic.

In developing this model, Kolb and Fry[12] helped to challenge those models of learning that attempt to reduce students' potential to a single dimension such as intelligence[13]. They also recognize that each learning style has its strengths and weaknesses and that fixation on one style can seriously disadvantage the student.

However, the experiential learning model is not applicable to all situations. The model also takes little account of different cultural experiences and conditions, such as culturally specific communication and cognitive styles[14]. Another questionable element is the predetermined order of a cycle, as it does not match the reality of thinking[15]. As Dewey[16] has said with respect to reflection, multiple processes can occur simultaneously.

[12] D. KOLB, R. FRY, *Toward an applied theory of experiential learning*, in C. Cooper (ed.), *Theories of Group Process*, John Wiley, New York, 1975.

[13] M. TENNANT, *Psychology and Adult Learning,* Routledge, London, 1997.

[14] BOUD, D., COHEN, R., WALKER, D., *Using Experience for Learning*, Open University Press, Warnickshire, 1993. PICKLES, T., *Experiential Learning Articles and Critiques of David Kolb's Theory*, 2002, <http://www.reviewing.co.uk/research/experiential.learning.htm>. SEAGAL, S., HORNE, D., *The Human Dynamics Body of Knowledge and its Implications for Education: A Brief Account*, 2002, <http://www.newhorizons.org/strategies/styles/horne.htm>.

[15] P. JARVIS, *Adult and Continuing Education, Theory and Practice*, Routledge, London, 1995. C. LOYNES, *Criticisms of Kolb*, 2000, <http://www.jiscmail.ac.uk.>.

[16] J. DEWEY, *The Philosophy of John Dewey: Vol. I: The Structure of Experience,* The University of Chicago Press, 1981, p. 53.

Given these problems, we must be cautious in approaching this vision of experiential learning. However, as Tennant[17] points out, the model provides an excellent framework for planning teaching and learning activities and can be used as a guide for understanding learning difficulties, career counseling, and academic advising[18]. For this reason, we chose the model as a general framework to develop considerations of experiential learning, imagination, and student individuality.

4. *About the study*

As mentioned at the beginning of the article, the aim of our study was to implement evaluation strategies that promote the individualization of learning processes and contexts in the field of art education of future elementary school teachers, taking into account the different experiential learning styles of students, with the aim of developing personal independence in dealing with problems.

A group of 45 third-year students participated in the empirical experiment. The students' participation was voluntary and they were not informed about the exact content and focus of the study until the results were delivered. This was one of the conditions for the study, which otherwise would not make sense.

In order to develop an individual strategy for each student, we needed to obtain the information that would help us classify the students. This test was developed by Kolb[19]. The classification was also based on observations of reactions, interests, characteristics of artworks, comments, etc. that we had made with the group during the three months prior to conducting the study[20]. These observations were recorded in a diary of each student. The learning styles test was a final confirmation of the students' personal learning styles, which allowed us to create individualized tasks for each student.

The experiment consisted of comparing the results obtained by the students under three different working conditions. In the first case, they performed a design exercise based on a problem in which all students received the same neutral information. In the second case, the students performed a task in which each student was given initial information to solve the problem according to his or her personal learning style. In the third case, students were given tasks that considered the elements that their learning style neglected. The three steps

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[17] M. TENNANT, *Psychology and Adult Learning,* Routledge, London, 1997.
[18] C. BEARD, J. WILSON, *The Power of Experiential Learning, A Handbook for Trainers and Educators,* Kogan Page, London, 2002.
[19] D. KOLB, *Test de estilos de aprendizaje por la experiencia* [Test of experience learning styles], 1985a, <https://www.ucursos.cl/ingenieria/2011/2/GL5101/1/material_docente/bajar?id_material=382449>.
[20] J. SAGADIN, *Statistične metode za pedagoge* [Statistical Methods for Educators], Obzorja, Maribor, 2003.

were carried out within three weeks, with one week between each of the three meetings.

In the case of the artistic work, where all students were given the same neutral task, the first condition, we decided that they should create a relief in clay. This is a task that is generally interesting for all types of students. It can be considered as a two-dimensional or three-dimensional work, depending on the definition and the working strategy that each student chooses. It is an open task that offers many possibilities of solution. This artwork was the first one made by the students to improve the validity of the data and to avoid the possible fear of the students to feel 'tested'.

In the second exercise, where all students received information according to their personal learning styles, each student was given a different, individual task to complete. The variations were based on the three elements that play an important role in solving tasks in any field of arts: the theoretical aspect or content, the subject to be represented, and the expressive techniques chosen by the students. Those who preferred three-dimensional work, such as making sculptures or maquettes, were given these types of assignments and could choose the art material and subject. The students who preferred drawing or painting could make such works as they liked and could also choose the material and the subject according to their personal interest. In the third case, students were given individual assignments that took into account the elements that they overlooked or neglected in their learning style. As in the second case, variations were made in terms of the theoretical problem, the subject and the artistic techniques to be used. Also in this case, an individual task was prepared for each student.

All the products created by the students were assessed according to the same scheme by three evaluators in order to ensure the objectivity of the evaluation. For this purpose, detailed instructions were prepared with the explanation of the categories developed to evaluate the works on a scale of 1 to 10 points.

To determine the extent to which this experience influenced the participants, they were asked to complete a questionnaire at the end of the experience. For the purposes of this article, we reproduce only one of the questions, which asked students to share their general impressions of the experience they had had[21].

The qualitative and quantitative interpretations of the data were supported by an analysis of variance. The design of the experiment was derived from the experience and the instruments were evaluated by a team of professionals, which guaranteed reliability and validity.

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[21] N. NAVARRETE-TINDALL et al., *Cross-Cultural and Experiential Learning in El Salvador for Extension Specialists: Lessons Learned in the Field,* Proceedings of the 14th Annual Conference Latinos in the Heartland, June 10-12, 2015, p. 60, Kansas City, Missouri, <https://www.cambio.missouri.edu/Library/>.

5. *Results*

To compare the results, a t-test was performed for comparisons between pairs. It is important to note that the results are correlated, since we are comparing the data of the same person in different conditions. They are presented in the following tables: Condition 01 refers to the product based on a problem in which all students received the same neutral information, taking care not to favor any learning style; Condition 02 refers to the product obtained in which each student received information according to his/her personal learning style; and Condition 03 refers to the work in which each student received information that took into account the elements that his/her personal learning style overlooked. As expected, the best results were obtained when the personal learning style was taken into account and the worst when it was neglected. This is presented in Table 1.

Condition	Mean	N	Standard deviation	Standard error mean
O1	8,60	45,00	,51	,13
O2	8,98	45,00	,66	,17
O3	7,73	45,00	,55	,14

Table 1 – *Descriptive statistics, first task*

Table 2 shows the correlations between the different working conditions. The highest values were obtained for the pair O1 and O2. The correlation is high (0.825) and statistically significant (p = 0.000). The other correlations are not statistically significant but high (about 0.46).

Pairs	Pairs	N	Correlation	SIG
Pair 1	O1 & O2	45	,825	,000
Pair 2	O1 & O3	45	,471	,077
Pair 3	O2 & O3	45	,462	,083

Table 2 – *Pairwise sample correlations*

Table 3 shows the results of the t-test. The differences between the three conditions are statistically significant, suggesting that the results of the different working conditions were statistically significant for the students.

Differences between pairs					95% Confidence Interval of differences		t	GL	SIG bila-teral
Pairs		mean	Standard deviation	Standard mean error					
					Lower	Higher			
Pair 1	O1 - O2	-,378	,375	,097	-,586	-,170	-3,90	14,000	,002
Pair 2	O1 - O3	,867	,546	,141	,564	1,169	6,145	14,000	,000
Pair 3	O2 - O3	1,244	,636	,164	,892	1,597	7,581	14,000	,000

Table 3 – *Pairwise comparison test, t-test*

6. *Discussion*

An interesting source of information about the students' reactions in performing each task are the notes taken by the researcher based on observation of their reactions, comments, motivation to work, confidence in the work, etc.

In the first task, there were no special comments because it was a task that the students understood as part of the study program. In the second task, they were surprised that each of them received a personal treatment. Motivation for the work increased as they were all satisfied with the task set. Activist and pragmatic students started working immediately, they found the solution to the problem simple and without doubts about the results. Divergent and theorists took more time to arrive at a solution they were satisfied with, but this is an important predominant feature of their behavior in all conditions. They were also satisfied and surprised at the possibility of receiving a task that fully met their expectations.

In the third task, students were surprised to find that no member of the group was given a task they were particularly interested in solving. It took them longer than usual to work effectively. Since most of them were not satisfied with the task and in some way felt that they could not solve it as successfully as usual, many of them justified themselves with expressions such as «If I had another task, I would do it much better» or «I got the most difficult task of all» or «If I were assigned another student's task (by name), I would do it much better».

That the situation was personally uncomfortable for them and could also

affect their self-esteem is shown by a short dialog between a student and the teacher (actually it is a monolog): «Professor, do you like my work? Why are you laughing? I do not like that nobody laughs at my work!». Many students asked their classmates and teachers if they liked their work and apologized, thinking their work would not be so bad if they had another topic to work on. Students took longer than usual to complete the assignment, and many of them did not even begin to understand the actual problem. In such cases, they began to work out unimportant details and even refused to tackle the problem as a whole. Many stated that the task was extremely complicated and extensive, that the solution did not motivate them to continue working, and that they were not satisfied with what they had achieved.

At the end of the three exercises, we informed the students about the characteristics and objectives of the test. In the survey at the end of the experience about the students' general impressions of the experience they had had, many of them noted that they found the third task difficult because of the intellectual effort required, although they considered the experience positive and worth trying. From the group's perspective, the possibility that no one would be satisfied with the task set shocked the students and opened a discussion about the consequences that such situations might entail in other contexts, including how to respond to similar situations in professional life when working with children in school.

However, the analysis and comparison of the products also revealed the importance of experience[22]. When comparing non-individual and individual treatment, important improvements were found: a broader approach to the task, precise definition of details, unusual methodological approaches to solving the problem. It was also interesting to find out that motivation is of central importance when it comes to developing many imaginative ideas when we are supposed to solve a task. The most important result was the practical recognition of the possibility that the problem remains unsolved, that it can promote dissatisfaction, and that for all these reasons it is important to know oneself as a teacher, each student in his/her individuality, in order to find personal means to help students to work in such situations. Themes related to student learning outcomes, experience, and classroom dynamics were identified. The experiential education format helped students have an authentic experience with imaginative problem solving. The tangible impact on their work was key[23].

Many were surprised because they had not imagined that the differences between exercises could elicit such different responses and reactions. Many new concerns were also expressed, such as how to conduct an objective, critical

[22] M. RÄSÄNEN, *Building Bridges – Experiential Art Understanding: A Work of Art as a Means of Understanding and Constructing Self,* University of Art and Design UIAH, Helsinki, 1998.
[23] S. HOFFMAN, S. SILVERBERG, *Training the next generation of global health advocates through experiential education: A mixed-methods case study evaluation*, 2015, <https://pubmed.ncbi.nlm.nih.gov/26680437/> doi: 10.17269/cjph.106.5099

self-assessment and how to conceptualize motivation when there are no obvious motivating factors for solving a problem, and how to recognize that problem solving requires effort that takes into account a holistic view of the elements that must be combined throughout the process. During their studies, students are given clear guidelines and goals for the tasks to be solved, but in professional life, self-knowledge is essential. The experiment's goal of focusing the pedagogical process on the individuality of each student through experiential learning, so that they have an authentic experience of the qualities of their personality that benefit them, but also those that represent a weakness in tackling a problem, was one of the responses to the critics of learning through problem solving, who argue that this method does not focus on the student, but on the problem itself.

7. *Conclusion*

In general, we know we have learned something when we know something we did not know before and can prove it, or when we are able to do something we could not do before. In both cases, proof is required. Thinking that we know or can do something is not enough; we must be able to show that we know it or are able to do it. Similarly, it is not enough to know the theory; we must be able to show by action that we know it. That is, it is a matter of applying the theory and concepts to real situations in order to solve authentic problems. By authentic problems we mean situations whose nature, goals, and solution are not necessarily related to our preferences and developed skills.

Although hypothetically a student might consciously go through each phase of a learning situation, practical experience and research show that not all students are equally effective and imaginative in all phases. Many show a marked preference for one or more of the phases and sometimes an aversion to one of the others. And there is no evidence that such preferences make them better.

This kind of experience can be held only if the researcher has actual and personal knowledge of each student's functioning, interests, talents, and the positive and negative aspects of his/her character. Without this knowledge, it is not easy to formulate individualized assignments. The goal is not to individualize them, but to make them aware of themselves and their individuality. For some students, this is not easy information. They do not like to expose themselves in front of their peers, and this can create a feeling of discomfort. For this reason, it is important that the teacher is able to maintain a positive climate in the classroom where students need to feel safe.

However, based on the research findings, it is possible to formulate some objective specific guidelines that could help students with different learning styles find the most effective way to solve problems: students with a convergent or pragmatic style need to clearly articulate the information, ideas, descriptions, analysis, and synthesis of data and details needed to solve the problem and use

the kind of imagination inherent in their style. They must recognize how important the details are to the final quality of the solution. The teacher must guide them to discover their creative potential and the value of different ideas, positions, and options in obtaining information to solve a problem, as well as the creative use of theoretical knowledge. He/she must also guide them to look critically at the work process, to reflect on themselves, and to deal with possible mistakes. They must realize that ideas in art become visible only when they materialize in the designed work or object, and that in art there are not only technical problems to solve.

Students with a divergent style need to be given clear and concise information necessary to solve the problem and eliminate unnecessary data. It is often helpful if they are given a timeline for investigative tasks, especially deadlines for completing phases of the work process. This is important because they tend to produce many ideas, but it is difficult for them to decide which ones to develop in the later stages. For this reason, it is also beneficial to propose a logical summary of the process, induction, deduction, basis of conclusions, and consequences, with a working hypothesis that leads from the general to the specific. These learners should practice a self-critical approach and avoid, as much as possible, establishing an extreme emotional relationship with the solution that would not allow them to be critical.

Learners with an accommodative or activist style need to recognize the importance of individual experimental search for information, possible options, and difficulties encountered. They need to discover the creative potential of new situations through reflection, observation, experimentation, and explanation of phenomena as they gather information to solve a problem. For this reason, they must be guided to use their knowledge and experience imaginatively and creatively before solving a problem, listing its essential components, ordering the possibilities, and inferring how they relate to the list of solutions. They must be able to discover and recognize their specific personal qualities in order to critically interpret evidence that supports the solution.

Students with an assimilative or theoretical style need prior investigation and explanation of the values for solving a particular problem in order to recognize the value of different ideas, positions, and options. They need to be guided to be flexible in processing information and to follow through on commitments. They must be able to recognize the need to gather information, learn new concepts, principles, or skills by participating in the problem-solving process and its practical application in real life. They must learn to look critically at the esthetic qualities of the solution and see the perspectives that the problem opens up once it is solved.

The next step of the investigation will focus on the practical application of strategies for individualizing learning through problem solving. One useful strategy would be to enhance individualized skill development that can be useful for students with different learning styles. The results support the assumption that important information for developing new learning environments in the

context of a rapidly changing world can be gained if we focus our research expectations not only on the numerical survey results, but also on the qualitative data to examine how students respond in specific learning contexts. These should be the topics of future research, just as it is important to find answers to the direct questions opened with the research: how to make progress in students' self-assessment in the classroom and how to promote students' critical and self-critical awareness, which is not an easy task for them or for their teachers. Considering that it is becoming more difficult every day to navigate a highly competitive professional world, which is a factor that demotivates students, we wonder how to reconceptualize motivation when there are no obvious motivating factors to solve certain problems. It is also not easy to teach them that solving problems requires an effort that takes a holistic view of the elements in the context of the global culture in which they live. And that this effort is often not prayed about in a way that we consider fair and objective.

It would also be important to update the research from a specific didactic point of view, considering the social aspects of the teaching and learning process when we promote strong differentiation and individualization. Another interesting study would be the transfer of these experiences to other school subjects. We are convinced that the results are transferable to other contents, school subjects and situations. Nevertheless, it is very important to think about how to motivate students in subjects that do not allow the kind of openness and flexibility that art classes do.

The value of the experience lies in its focus on the need to develop students' individual skills, to understand difficulties as problems, to recognize their elements, to make meaningful connections between them in order to solve them imaginatively, efficiently, and independently in order to narrow the gap between study and future professional life. Indeed, a lifelong process.

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