

Teacher's Competencies in Teaching Home Economics to the Acquisition of Student's 21st Century Skills

Mabeth R. Escobar

Laguna State Polytechnic University, Sta. Cruz, Laguna, 4009, Philippines

Abstract

This study aims to determine the teacher's competencies in teaching home economics and its relation to the extent of 21st century acquired skills of students. The intent of the study is to analyze the teacher's competence in teaching home economics in terms of classroom management, guidance skills, professional skills, delivery of the lesson in home economics, and also determine the correlation to acquired 21st century skills of Students in terms of critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills. The study was focused on the grade 7 students of Victoria District, the academic year 2022-2023. The study will use 15 public school teachers teaching Home Economics and 150 public school students as the respondents who are selected through a stratified random sampling technique.

Level of teacher's competencies in terms of classroom management, guidance skills, professional skills, delivery of the lesson were remarked as to High as evaluated by the respondents. This means further that the respondents manifested that the teachers possess high level of classroom management skills which aids to students learning, guiding abilities that assist learners in receiving advice on how to handle issues that could interfere with their academic performance, possess high levels of professional competencies that, when connected to the curriculum materials they utilize, promote instruction and student learning, assists students in engaging and promoting active involvement in class. Additionally, the correlation to acquired 21st century skills of Students in terms of critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills is also remarked High. Furthermore, this implies that respondents believe they have strong critical thinking skills, which enable them to reflect on and comprehend their points of view, have strong problem-solving abilities, allowing them to take initiative and consider actions and consequences to lead their decisions along their learning journey, have strong creative thinking skills, which allows them to freely explore and learn new things from one another as they conquer problems, bring their innovative ideas to fruition, and push their boundaries, have great communication abilities, which allows them to be more participatory in classrooms and lead to improved clarity in understanding the material being taught, have strong collaborative talents, which allows them to improve the way your team collaborates and solves problems. This results in more innovation, more efficient processes, greater success, and better communication.

Based on the study it is revealed the relationship between the level of teacher's competencies in terms of classroom management skills, guidance skills, professional skills, and delivery of the lesson to the extent of 21st century skills in terms of critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills. This indicates further that teachers' good classroom management skills aids students' acquisition of the mentioned 21st century skills that would lead them to be competent students as well. However, a not significant relationship of the teachers' competence in terms of guidance skills, professional skills and delivery of the lesson may imply that there are other factors that may be considered that can be in relation to the acquisition of the 21st century skills.

In light of the conclusion drawn from the findings, the following recommendations are hereby given, Teachers ensure learning involves more than just memorization and retention. During each lesson, teachers should encourage pupils to be creative. Teachers should implement 21st-century curricula, which can incorporate real-world experiences, authentic learning, media literacy, information and communication technologies, and knowledge, thinking, and innovative abilities into the academic courses.

Keywords: Teacher's competencies; 21st century; Home Economics; classroom management; guidance; professional; delivery of the lesson; critical thinking; problem solving; creative thinking; communication; collaborative

Main text

The nation's development is heavily reliant on education. The effectiveness of schooling will also depend on the school's teachers' performances. Growing as a teacher quality is viewed as a crucial reform to enhance student performance. This is what defines a competent teacher who can develop 21st century skills and improve students' learning. Educating young children can be a difficult assignment for teachers because it strongly requires the strong competences needed to develop the necessary knowledge and abilities among the students listed on the curriculum. The development is required by Republic Act 10533, often known as The Enhanced Basic Education Act mandates that the program must satisfy the demand for qualified teachers and school officials' accomplishment and make sure it has a top-notch educational system.

Today's time is involved in shaping the future since the lifestyle choices people make in everyday life have a far-reaching impact on both a local and global level. Societies are also changing rapidly and coming generations will face multiple societal and environmental challenges such as climate change, globalization, poverty and economic inequalities. Today's educational institutions need to prepare the future generation for the challenges of a constantly changing society and somehow capitalize on the novel pedagogical potential of digitalization. Recently, many countries have pursued school reforms that emphasize 21st century skills or competencies that emphasize creative knowledge work in a digital society. The future of Home Economics (HE) is a recurrent topic in the HE profession and the future development of the discipline has been addressed by various researchers.

In this study we consider the term 21st century competencies as an umbrella concept of desired skills and competencies for a person to survive in a future society (Binkley et al., 2012). The emphasis is on higher level thinking skills (creative thinking, problem solving and critical thinking), communication and collaboration skills as well as tools of digital technology and digital literacy skills. Moreover, the framework of an ever-changing world with both global and local citizenship demands certain life skills and intrapersonal responsibilities are seen as prerequisites for the future. The terms competencies and skills have been used interchangeably in literature. According to Wang (2019), competency is an integration of knowledge, skills, attitudes and values that are required for citizens to participate fully in society in the 21st century (Voogt & Roblin, 2012).

Hence, the researcher wants to determine teachers' competencies in teaching Home Economics to the acquisition of 21st century skills has varied reasons to consider and make in-depth analysis to shade drifts and issues. There are several definitions for the concept of 21st century competencies that have been recommended by diverse organizations. These have been widely adapted and included in national curricula in many western countries.

Statement of the Problem

1. What is the level of teacher's competencies with regards to:
 - 1.1 classroom management;
 - 1.2 guidance skills;
 - 1.3 professional skills; and,
 - 1.4 delivery of the lesson?
2. What is the extent of 21st Century skills in terms of:
 - 2.1 critical thinking skills;
 - 2.2 problem solving skills;
 - 2.3 creative thinking skills;
 - 2.4 communication skills; and
 - 2.5 collaborative skills?
3. Do teacher's competencies have significant relationship to students' acquisition of 21st Century skills in Home Economics?

Hypothesis

Teacher's competencies have no significant relationship to students' acquisition of 21st Century skills in Home Economics.

Research Design

The study utilized the descriptive research design. This design is also frequently used within mixed-methods studies where qualitative data can explain quantitative findings in explanatory studies, be used for questionnaire development in exploratory studies and validate and corroborate findings in convergent studies (Doyle et al., 2016). Using descriptive research in this manner can help to make the findings of intervention studies more meaningful. It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Because the human mind cannot extract the full import of a large mass of raw data, descriptive statistics is very important in reducing the data to manageable form. When in-depth, narrative descriptions of small number of cases are involved. Researchers use description as a tool to organize data into patterns that emerge during analysis. Those patterns aid the mind in comprehending a qualitative study and its implications (Knupfer & McLellan, 2017).

Descriptive research holds a valuable place within education because in contrast to laboratory experiments, the human nature of educational research is critical to the result. Educational environments and experiences inherently contain many extraneous variables that cannot be controlled in a realistic situation which often call for careful observation of specific life situations and can require the collection of data from a large number of people spread throughout a wide geographic region. The descriptive component is critical to educational research because educational events cannot be reduced to a controlled laboratory environment. The types of questions generated in educational research require descriptions that help to explain the data and direct emergent prescriptions for educational events.

This method was used in the study to gather, organize, analyze, and present the level of competency of TLE teachers. Gap analysis was used to determine the gaps between the competencies of TLE teachers and the acceptable competency levels.

Statistical Treatment of Data

The statistical treatment of data is used to compute, analyze, and interpret the data given by the respondents. After administering the questionnaire, the responses of the selected teachers from schools of Victoria Sub-office/District were tallied, analyzed and interpreted.

Level of teacher's competencies in terms of classroom management, guidance skills, professional skills, delivery of the lesson of selected teachers at schools in Victoria District were determine with the use of weighted mean and standard deviation.

On the other hand, the variables including critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills had weighted mean and standard deviations as statistical treatment. Lastly, in determining the significant relationship between the teachers' teaching competencies and Acquired 21st Century skills of Students. Minitab 14 was used in computing the data gathered and treated them statistically using Pearson's Moment of Correlation Coefficient (Pearson's R). The computed p-values were compared to the level of significance at 0.05 to determine the significant relationship between teacher's competence and students acquired 21st century skills in Home Economics.

Tables

Table 1. Level of Teacher's Competencies with regards to Classroom Management Skills

STATEMENT	Mean	SD	Remarks
My teacher...			
starts and end the class on time	3.94	0.98	Agree
maintain an active and disciplined classroom atmosphere	3.75	0.86	Agree
ensure that the classroom is conducive and safe for every learner	4.47	0.89	Strongly Agree
always the classroom activities and progress	4.36	0.85	Strongly Agree
uphold learning environments that foster fairness and respect for the teacher	4.32	0.76	Strongly Agree
Grand Mean	4.17		Agree
Interpretation		High	

Legend:

Scale	Range	Remarks	Interpretation
5	4.20 – 5.00	Strongly Agree	Very High
4	3.40 – 4.19	Agree	High
3	2.60 – 3.39	Moderately Agree	Moderately High
2	1.80 – 2.59	Disagree	Low
1	1.00 – 1.79	Strongly Disagree	Very Low

Table 1 presented the level of teacher's competencies in terms of classroom management skills. The respondents strongly agreed that the teachers ensure that the classroom is conducive and safe for every learner, it yielded the highest ($M=4.47$, $SD=0.89$). However, they agreed that the teachers maintain an active and disciplined classroom atmosphere, it received the lowest ($M=3.75$, $SD=0.86$).

Overall, level of teacher's competencies in terms of classroom management skills gained the grand mean of 4.17 and was interpreted High as evaluated by the respondents. This means further that the respondents manifested that the teachers possess high level of classroom management skills which aids to students learning.

Table 2. Level of Teacher's Competencies with regards to Guidance Skills

STATEMENT	Mean	SD	Remarks
My teacher...			
organize rapport that will develop camaraderie and socialization among my learners	4.31	0.72	Strongly Agree
show concern for my learners who faces personal problems	4.18	0.90	Agree
give considerations to my students when needed	4.26	0.85	Strongly Agree
treat and solve issues in the classroom fairly	3.93	1.12	Agree
provides appropriate coaching that are responsive to learner's personal circumstances	4.16	0.82	Agree
Grand Mean	4.17		Agree
Interpretation		High	

Table 2 presented the level of teacher's competencies in terms of guidance skills. The respondents strongly agreed that the teachers organize rapport that will develop camaraderie and socialization among my learners, it reached the highest ($M=4.31$, $SD=0.72$). However, they agreed that the teachers treat and solve issues in the classroom fairly, it acquired the lowest ($M=3.93$, $SD=1.12$).

Overall, level of teacher's competencies in terms of guidance skills gained the grand mean of 4.17 and was interpreted High as evaluated by the respondents. This further indicates that the respondents claimed that teachers have high levels of guiding abilities that assist learners in receiving advice on how to handle issues that could interfere with their academic performance.

Table 3. Level of Teacher's Competencies with regards to Professional Skills

STATEMENT	Mean	SD	Remarks
My teacher...			
Exhibit resilience in facing difficult circumstances	3.67	1.05	Agree
accept suggestions and criticism	3.63	0.90	Agree
Uphold positive and practices teaching behavior for teaching and learning process	2.96	1.33	Moderately Agree
can handle personal problems over my teaching career	4.29	0.89	Strongly Agree
have good diction and pronunciation when teaching the class	4.56	0.70	Strongly Agree
Grand Mean	3.82		Agree
Interpretation		High	

Table 3 presented the level of teacher's competencies in terms of professional skills. The respondents strongly agreed that teachers have good diction and pronunciation when teaching the class, it reached the highest

($M=4.56$, $SD=0.70$). However, they agreed that the teachers uphold positive and practices teaching behavior for teaching and learning process, it acquired the lowest ($M=2.96$, $SD=1.33$).

Overall, level of teacher's competencies in terms of professional skills gained the grand mean of 3.82 and was interpreted High as evaluated by the respondents. This further indicates that the respondents claimed that teachers have high levels of professionalism in terms of showing resilience and handling personal problems over teaching career.

Table 4. Level of Teacher's Competencies with regards to Delivery of the Lesson

STATEMENT	Mean	SD	Remarks
My teacher...			
use teaching approach that is suited for my learners	4.38	0.87	Strongly Agree
utilize multimedia and technology to facilitate teaching and learning process	4.25	0.75	Strongly Agree
facilitate teaching and learning process that supports timely and relevant teaching materials	3.93	1.21	Agree
use mix classroom teaching with outbound teaching	3.61	1.02	Agree
ensure that students understand and have mastery of the lesson	4.43	0.74	Strongly Agree
Grand Mean	4.12		Agree
Interpretation		High	

Table 4 presented the level of teacher's competencies in terms of delivery of the lesson. The respondents strongly agreed that the teachers ensure that students understand and have mastery of the lesson, it reached the highest ($M=4.43$, $SD=0.74$). However, they agreed that the teachers t use mix classroom teaching with outbound teaching, it acquired the lowest ($M=3.616$, $SD=1.02$).

Overall, level of teacher's competencies in terms of delivery of the lesson gained the grand mean of 4.12 and was interpreted High as evaluated by the respondents. This also suggests that respondents believe teachers offer lessons at a high level, which assists students in engaging and promoting active involvement in class.

Extent of 21st Century Skills

Table 5. Extent of 21st Century Skills in terms of Critical Thinking Skills

STATEMENT	Mean	SD	Remarks
As a student I...			
am open minded about the topics in home economics.	3.91	1.00	Agree
have a deep understanding about the lessons.	3.71	0.80	Agree
am observant with the appropriate technics in home economics	4.37	0.90	Strongly Agree
used higher order thinking skills in studying home economics.	4.27	0.85	Strongly Agree
acquire knowledge based on facts and evidences.	4.25	0.77	Strongly Agree
Grand Mean	4.10		Agree
Interpretation		High	

Table 5 presented the Extent of 21st Century Skills in terms of Critical Thinking Skills. The respondents strongly agreed that they are observant with the appropriate technics in home economics, it reached the highest ($M=4.37$, $SD=0.90$). However, they agreed that they have a deep understanding about the lessons., it acquired the lowest ($M=3.71$, $SD=0.80$).

Overall, level of teacher's competencies in terms of Critical Thinking skills gained the grand mean of 4.10 and was interpreted High as evaluated by the respondents. This also means that respondents believe they have high critical skills abilities, allowing them to be able to think critically are varied and include observation, analysis, interpretation, reflection, evaluation, inference, explanation, problem solving, and decision making.

Table 6. Extent of 21st Century Skills in terms of Problem-Solving Skills

STATEMENT	Mean	SD	Remarks
As a student I...			
always analyze the questions and problems.	4.23	0.73	Strongly Agree
have a strong-decision-making skills.	4.13	0.81	Agree
always have a reflection to their works.	4.21	0.82	Strongly Agree
think of the best possible solution.	3.88	0.99	Agree
tries to complete the task systematically.	4.11	0.72	Agree
Grand Mean	4.11		Agree
Interpretation		High	

Table 6 presented the Extent of 21st Century Skills in terms of Problem-solving Skills. The respondents strongly agreed that they always analyze the questions and problems, it reached the highest ($M=4.23$, $SD=0.73$). However, they agreed that they think of the best possible solution, it acquired the lowest ($M=3.88$, $SD=.99$).

Overall, level of teacher's competencies in terms of Problem-solving skills gained the grand mean of 4.11 and was interpreted High as evaluated by the respondents. This also means that respondents believe they have strong problem-solving abilities, allowing them to take initiative and consider actions and consequences to lead their decisions along their learning journey.

Table 7. Extent of 21st Century Skills in terms of Creative Thinking Skills

STATEMENT	Mean	SD	Remarks
As a student I...			
do their outputs constructively.	3.51	0.97	Agree
works and performance are unique.	3.69	0.78	Agree
are risk takers in doing their outputs.	3.08	1.34	Moderately Agree
develop innovative projects.	4.35	0.79	Strongly Agree
have the ability to ideate and create.	4.49	0.71	Strongly Agree
Grand Mean	3.83		Agree
Interpretation		High	

Table 7 presented the Extent of 21st Century Skills in terms of creative thinking Skills. The respondents strongly agreed that they have the ability to ideate and create, it reached the highest ($M=4.49$, $SD=0.71$). However, they moderately agreed that they are risk takers in doing their outputs, it acquired the lowest ($M=3.08$, $SD=1.34$).

Overall, level of teacher's competencies in terms of creative thinking skills gained the grand mean of 3.83 and was interpreted High as evaluated by the respondents. This also indicates that respondents believe they have strong creative thinking skills, which allows them to freely explore and learn new things from one another as they conquer problems, bring their innovative ideas to fruition, and push their boundaries.

Table 8. Extent of 21st Century Skills in terms of Communication Skills

STATEMENT	Mean	SD	Remarks
As a student I...			
have good communication with the teacher.	4.29	0.91	Strongly Agree
can ask and give reflections to the topic.	4.27	0.77	Strongly Agree
communicates with his/her classmates.	3.83	1.17	Agree
can express his/her own ideas regarding the topic.	3.52	1.07	Agree
can raise concerns and queries with her teacher.	4.35	0.72	Strongly Agree
Grand Mean	4.05		Agree
Interpretation		High	

Table 8 presented the Extent of 21st Century Skills in terms of communication Skills. The respondents strongly agreed that they can raise concerns and queries with her teacher, it reached the highest ($M=4.35$, $SD=0.72$). However, they moderately agreed that they can express his/her own ideas regarding the topic, it acquired the lowest ($M=3.52$, $SD=1.07$).

Overall, level of teacher's competencies in terms of communication skills gained the grand mean of 4.05 and was interpreted High as evaluated by the respondents. This also suggests that respondents believe they have great communication abilities, which allows them to be more participatory in classrooms and lead to improved clarity in understanding the material being taught.

Table 9. Extent of 21st Century Skills in terms of Collaborative Skills

STATEMENT	Mean	SD	Remarks
As a student I...			
can work with his/her classmates	4.23	0.82	Strongly Agree
can share his ideas with his/her classmates	4.10	0.82	Agree
know how to take the opinions of others.	4.18	0.98	Agree
actively participates in the group projects	4.02	0.96	Agree
can teach his/her peers regarding the lesson.	4.16	0.79	Agree
Grand Mean	4.14		Agree
Interpretation		High	

Table 9 presented the Extent of 21st Century Skills in terms of collaborative skills. The respondents strongly agreed that they can work with his/her classmates, it reached the highest ($M=4.23$, $SD=0.82$). However, they agreed that they are actively participates in the group projects, it acquired the lowest ($M=4.02$, $SD=.96$).

Overall, level of teacher's competencies in terms of collaborative skills gained the grand mean of 4.14 and was interpreted High as evaluated by the respondents. This also implies that respondents believe they have strong collaborative talents, which allows them to improve the way your team collaborates and solves problems. This results in more innovation, more efficient processes, greater success, and better communication.

Table 1. Significant Relationship between Teacher's Competence and Student's Acquired 21st Century skills in Home Economics

	Variables	r-value	Degree of Correlation	p-value	Analysis
Classroom Management	Critical Thinking Skills	0.175	Negligible	0.032	Significant
	Problem Solving Skills	0.168	Negligible	0.040	Significant
	Creative Thinking Skills	0.159	Negligible	0.050	Significant
	Communication Skills	0.202	Weak	0.013	Significant
	Collaborative Skills	0.391	Weak	0.000	Significant
Guidance Skills	Critical Thinking Skills	0.068	Negligible	0.407	Not Significant
	Problem Solving Skills	0.006	Negligible	0.944	Not Significant
	Creative Thinking Skills	0.032	Negligible	0.694	Not Significant
	Communication Skills	0.015	Negligible	0.854	Not Significant
	Collaborative Skills	0.073	Negligible	0.373	Not Significant
Professional Skills	Critical Thinking Skills	0.126	Negligible	0.125	Not Significant
	Problem Solving Skills	0.065	Negligible	0.432	Not Significant
	Creative Thinking Skills	0.012	Negligible	0.694	Not Significant
	Communication Skills	0.069	Negligible	0.403	Not Significant
	Collaborative Skills	0.002	Negligible	0.982	Not Significant
Delivery of the Lesson	Critical Thinking Skills	0.114	Negligible	0.166	Not Significant
	Problem Solving Skills	0.029	Negligible	0.725	Not Significant
	Creative Thinking Skills	0.023	Negligible	0.776	Not Significant
	Communication Skills	0.017	Negligible	0.832	Not Significant
	Collaborative Skills	0.008	Negligible	0.926	Not Significant

Range	Degree of Correlation
0.81 – 1.00	Very Strong
0.61 – 0.80	Strong
0.41 – 0.60	Moderate
0.21 – 0.40	Weak
0.00 – 0.20	Negligible

Table 1 revealed the relationship between the level of teacher's competencies in terms of classroom management skills, guidance skills, professional skills and delivery of the lesson to the extent of 21st century skills in terms of critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills.

It can be seen that only teacher's competencies in terms of classroom management skills convey a negligible to weak yet significant relationship to extent of 21st century skills as indicated by the obtained r-values ranging from (0.159) to (0.391) and p-values (0.000) to (0.050) which was lower than the 0.05 level of significance that supports the result of the analysis.

This indicates further that teachers' good classroom management skills aids students' acquisition of the mentioned 21st century skills that would lead them to be competent students as well.

However, a not significant relationship of the teachers' competence in terms of guidance skills, professional skills and delivery of the lesson may imply that there are other factors that may be considered that can be in relation to the acquisition of the 21st century skills.

Findings and Summary

Level of teacher's competencies in terms of classroom management, guidance skills, professional skills, delivery of the lesson were remarked as to High as evaluated by the respondents. This means further that the respondents manifested that the teachers possess high level of classroom management skills which aids to students learning, guiding abilities that assist learners in receiving advice on how to handle issues that could interfere with their academic performance, possess high levels of professional competencies that, when connected to the curriculum materials they utilize, promote instruction and student learning, assists students in engaging and promoting active involvement in class. Additionally, the correlation to acquired 21st century skills of Students in terms of critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills is also remarked High. Furthermore, this implies that respondents believe they have strong critical thinking skills, which enable them to reflect on and comprehend their points of view, have strong problem-solving abilities, allowing them to take initiative and consider actions and consequences to lead their decisions along their learning journey, have

strong creative thinking skills, which allows them to freely explore and learn new things from one another as they conquer problems, bring their innovative ideas to fruition, and push their boundaries, have great communication abilities, which allows them to be more participatory in classrooms and lead to improved clarity in understanding the material being taught, have strong collaborative talents, which allows them to improve the way your team collaborates and solves problems. This results in more innovation, more efficient processes, greater success, and better communication.

Conclusion

In the light of the findings of the study, the following conclusions were given:

Based on the study it is revealed the relationship between the level of teacher's competencies in terms of classroom management skills, guidance skills, professional skills and delivery of the lesson to the extent of 21st century skills in terms of critical thinking skills, problem solving skills, creative thinking skills, communication skills and collaborative skills.

This indicates further that teachers' good classroom management skills aids students' acquisition of the mentioned 21st century skills that would lead them to be competent students as well. However, a not significant relationship of the teachers' competence in terms of guidance skills, professional skills and delivery of the lesson may imply that there are other factors that may be considered that can be in relation to the acquisition of the 21st century skills.

ACKNOWLEDGMENTS

First and foremost, the researcher would like to thank the Heavenly Father for the strength, good health, knowledge and wisdom He has given her to make this study possible. This research paper is wholeheartedly and devotedly dedicated to the most valuable persons in her life.

To her loving husband, Mr. Max Ivanjun G. Lorenzo for supporting, giving strength, motivation and power in the everyday life;

To her beloved parents, Mr. Ariel C. Escobar and Mrs. Estela R. Escobar for their love, encouragement, financial support, and for serving as an inspiration to finish this research;

To Escobar and Lorenzo family, for their encouragement and moral support;

To her friends, for inspiring and motivating her in making this research;

To her best thesis Adviser, ROSARIO G. CATAPANG, PhD, Associate Dean of College of Teacher Education, for her tireless effort and utmost support in the fullness of the study, and her inspiration to make this study possible, for being so patient in teaching her, for the support and suggestions.

REFERENCE

- Abram 2013 Collaborative group versus individual assessment in mathematics: Group processes and outcomes. Educational Assessment,
- Binkley 2012 Defining Twenty-First Century Skills. In P. Griffin, B. McGaw, & E. Care (Eds.), Assessment
- Doyle et.al. 2016 Significance in statistics & survey .Creative Research System
- Effiong 2017 student and teacher-centered classroom management: A case study of three teachers' beliefs and practices. Unpublished Doctoral Dissertation. The State University of New Jersey.
- Johnson 2012 Examining the 21st century classroom: Developing an innovation configuration map. Journal of Educational Computing Research, 50(2), 161-178
- Krupfer 2017 Fundamental assessment principles for teachers and school administrators. Practical Assessment, Research & Evaluation
- Robson 2013 Creative and critical thinking: Independent or overlapping components? Thinking Skills and Creativity
- Schneider 2012, V. Critical thinking in the elementary classroom: Problems and solutions. Retrieved from http://eps.schoolspecialty.com/downloads/articles/critical_thinkingschneider.pdf 14
- Voogt & Roblin 2012 Sues in history teaching. New York : Taylor & Francis-Library 3
- Wang 2019 classroom organization and management. In M. C. Wittrock(Ed.). Handbook of research on teaching"