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SAROPAS: A COMPETENCY-BASED PERFORMANCE TASK DESIGN MODEL

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Abstract

The Organization for Economic Cooperation and Development (OECD) published the learning framework 2030 which depicts students' competency for future demands as three intertwined currents of knowledge, skills, and attitudes and values. Student's knowledge can be observed when it is mobilized as skills in solving problems, and the use of knowledge and skills is mediated by attitudes and values. In other words, a student's competency can better be observed and assessed when they respond to real situations and exercise their knowledge and skills to resolve problems.

In educational practices, performance tasks are designed to mimic complex demands and challenges in real life that require students to apply their knowledge, skills, and attitudes and values in actions. For K-12 educators, the call for clear guidance of designing competency-based performance tasks is urgent. Wiggins & McTighe (2005) in their seminal work Understanding by Design suggested framing performance tasks using elements of authentic assessments — GRASPS (Goal, Role, Audience, Situation, Performance, Standards). GRASPS provides well-organized facets in designing assessments. However, considering the other side of the coin, curriculum design, GRASPS may be short for laying out the details of the design process. We refined GRASPS into SAROPAS (Setting/Scenario, Aim, Role, Observer, Products, Actions, Standards), a model with finer granularity in designing the curriculum and assessment which made the design process applicable and easier.

A survey was conducted to verify the strengths of SAROPAS in designing performance tasks. One hundred and seventy-one in-service teachers participated in the survey. Three tasks were given to the participants asking for their review on what skills can possibly be assessed in resolving the tasks. The result showed that the task designed by the SAROPAS model obtained the highest ratings and agreement in mobilizing six types of skills which could really demonstrate students' competency. Implications and suggestions about designing competency-based performance tasks were provided in this study.

Keywords: *Competency-based performance tasks, curriculum design, assessment design.*

1. Introduction

The Organization for Economic Cooperation and Development proposed learning framework 2030 (OECD, 2018). In the learning framework, students' competency for future demands were depicted as three intertwined currents of knowledge, skills, and attitudes and values. The required knowledge for the future, from specialized to broad, encompassed disciplinary knowledge, interdisciplinary knowledge, epistemic knowledge, and procedural knowledge. A broad range of skills, including cognitive, metacognitive, emotional, social, physical, and practical skills, were also needed to apply knowledge in real circumstances surrounding us. The attitudes and values, which can be manifested at personal, local, societal, and global levels, mediated the use of knowledge and skills. While one's knowledge and attitudes and values are mostly invisible and intangible, the mobilization of skills is observable and assessable. Thus, skills demonstrated in resolving tasks can be regarded as the evidence of learning.

A performance task is a task that "uses one's knowledge to effectively act or bring to fruition a complex product that reveals one's knowledge and expertise" (Wiggins & McTighe, 2005, p. 346). In educational practices, a performance task is often constructed to evaluate students' knowledge, skills, and attitudes and values. It was designed as an authentic, real-world problem, characterized with contextual features resembling situations in everyday life. Students demonstrate their skills by resolving the task and output tangible products or visible performance for target audience. The products/performance will also be evaluated by the criteria which are appropriate to the task.

The purpose of this present study was to propose a new model — SAROPAS — as a guideline for designing performance tasks, and to verify the effect of this model in developing performance tasks.

2. The model for designing performance tasks

Wiggins and McTighe (2005) proposed a model GRASPS to design performance tasks. GRASPS stands for the goal, role, audience, situation, performance, and standards of a task. The *goal* is the purpose for completing the task, or the problem/challenge/obstacles to be resolved. The *role* is the character who is responsible for carrying out the task. The *audience* refers to the target recipient, audience, client, or who needs to be convinced or to evaluate the outcome. The *situation* refers to the context which the actor acts in, or the challenges to be dealt with. The *performance* refers to the product/outcome to be created or produced to reach the goal. The *standards* are the criteria for success.

Designing a performance task and applying the task as an assessment tool are two sides of a coin. The assessment of skills should be consistent with what the goal was set for. Suggested by Wiggins and McTighe (2005), the GRASPS model provides the elements to create a well-organized performance task, and the six facets of understanding (i.e., explanation, interpretation, application, perspectives, empathy, and reflection) can be used as a blueprint for the assessment.

3. SAROPAS: A refined model of GRASPS

Although GRASPS offered a good framework for designing tasks, finer details about each task element are still needed to facilitate task designs. Based on GRASPS, the SAROPAS model re-organized task elements and posited each element a concise function that contributes the performance task. There are seven elements of the SAROPAS model, including setting/scenario, aim, role, observer, product, action, standards.

The *setting*/scenario is the context or circumstance in which the task is to be completed. The setting is like the scenario of a story, which provides the contextual information for solving the task.

The *aim* refers to the goal of the task, indicating what is to be accomplished or dealt with.

The *role* is the character which the students are going to play in the scenario.

The *observer* is the one in the scenario who judges whether the outcome is satisfied or successful. The observer can be the client, customer, supervisor, or anyone who made the final decision.

The *product* is the tangible outcome produced or created by students. A product can be a poster, a card, a craft, or anything that is *static* and can be evaluated by the observer.

The *action* is the visible performance acted out by students. An action can be an oral presentation, a talk, or anything that can be performed and evaluated.

Finally, the *standards* are the criteria for success. Scoring rubrics for the *product* and *action* outcomes are suggested as the rubrics may contain specific descriptions about the product and action.

The task elements of SAROPAS were wrapped in a storyline, so resolving the task may resemble what adults usually encounter in real situations. Narrative in the description provides the basis for learning and understanding (Hokanson & Fraher, 2008). The discrepancy before and after completing the task may help move students forward to solve problems (Cook, 2020; Hartmann, 2020).

4. Analysis of task descriptions using SAROPAS

Three types of task descriptions were collected. As shown in Table 1, Task 1 represents a type of task description which mentions about an upcoming lab activity without much emphasis on what is expected to be done. Task 2 is a type of description explaining a hands-on activity in a community fair in which students perform magic tricks. This description characterizes the kind of task which expects students apply what had learned in the class and present them in practice. Similar to the description of Task 2, Task 3 is about performing magic tricks in a school fair but with finer details.

The descriptions of Tasks 1 and 2 are typical ones given to students in the class; Task 3 is an example task showing the strengths of the SAROPAS model. Three task descriptions were analyzed using the elements of the SAROPAS model. Each sentence of the description was parsed, numerically labeled, and categorized into the corresponding element(s). Table 2 is a summary of the labels found in three task descriptions. For Task 1, the information about the setting, aim, actions, and possible products of the task were identified. In the description of Task 2, the role of students and the observer were found, but no product was clearly specified. The description of Task 3 is the lengthiest among the three. Comparing with the other two, the description of Task 3 provided all the elements of SAROPAS, including the standards of the actions/products, which were missing in Task 1 and 2. The description of Task 3 contains complete elements of SAROPAS.

Table 1. Three task descriptions.

Task	Description
Task 1 An Experiment on Acids, Bases, and Salts	Next week this time, ○,1you will conduct an experiment on the properties of acids, bases, and salts in groups. Because you are going to learn the properties of acids, bases, and salts, and run through an experiment in class, ○,2you will perform an experiment with regular food items on your own. For this purpose, ○,3you will discuss in groups what to bring to class for the experiment. During the class next week, you will receive a worksheet where you can find instructions of procedures and questions for the experiment in groups. After the experimental task, ○,4you are to complete the worksheet and hand it into the basket on my desk.
Task 2 Community Fair	○,1The exciting yearly Community Fair will take place in the mid of this semester. Because you have learned about the properties of acids, bases, and salts, ○,2you are to set up a booth in the Fair in groups. ○,3You will make use of common food items in daily lives, ○,4apply the knowledge of acids, bases, and salts, and ○,5perform magic tricks in front of the public.
Task 3 Magicians at the School Fair	○,1The Yearly School Fair is in the mid of the semester. ○,2You will set up a stand at the Fair where ○,3you will act as magicians in groups applying the knowledge of acid, bases, and salts learned in class and ○,4perform magic shows using daily food items in front of Fair attenders. ○,5You will perform tricks including the invisible scriptures, spitting red wine, and dripping blood soap that you learn in class. Additionally, ○,6you are encouraged to research and develop more magic items yourself. The standards for successful performance are: 1) ○,aexplaining the pH ranges and colors corresponding to the acid-base indicator, 2) ○,bexplaining the meanings of pH values, 3) ○,citing the pH values of common food items in daily lives, 4) ○,dcomparing the difference between food items of strong acid-base and weak acid-base, 5) ○,eexplaining how to prepare and come up with a weak acid and a weak base solutions, 6) ○,fgiving an example of how to come up with a salt using a weak base or a weak acid, and 7) ○,gpaying attention to safety during performances.

Table 2 Analysis of task description using SAROPAS.

Task	Setting/ Scenario	Aim	Role	Observer	Products	Actions	Standards
Task 1	1	1, 2			4	3, 4	
Task 2	1	2	5	5		3, 4, 5	
Task 3	1	2	3	4	5	4, 5, 6	a, b, c, d, e, f, g

5. Methodology

A survey was conducted to understand in-service teachers' opinions about how different task descriptions may help mobilize students' skills. A questionnaire was designed for the survey.

Based on the OECD learning framework, six categories of skills were set as the outcome performance for students. In this study, the cognitive skills were further classified into two levels (Anderson & Krathwohl, 2001): lower-level cognitive skills (remembering, understanding, and applying) and higher-level cognitive skills (analyzing, evaluating, and creating). Therefore, there were seven skills to be investigated, including lower-level cognitive skills, higher-level cognitive skills, metacognitive skills, emotional skills, social skills, physical skills, and practical skills.

A total of 34 question items were developed in the questionnaire: six for lower-level cognitive skills (remembering, understanding, applying), eight for higher-level cognitive skills (analyzing, evaluating, creating), seven for metacognitive skills, five for emotional skills, four for social skills, two for physical skills, and two for practical skills. A five-point Likert scale was used, from 1 indicating the least likely to 5 the most likely to demonstrate that specific skill in completing the task.

One hundred and seventy-one in-service teachers participated in the survey. A total of 171 valid questionnaires were collected.

6. Results and findings

Descriptive statistics of the survey are presented in Table 3. The average rating for Task 1 is 3.11, Task 2 is 3.91, and Task 3 is 4.57. The result suggests that most teachers regarded the design of Task 3 can most likely help students cultivate seven types of skills. On the contrary, Task 1 received the

lowest rating among the three, on each category of skill. For Task 1, the metacognitive and emotional skills obtained the lowest ratings, which suggests that most teachers did not agree that students could exhibit their metacognitive and emotional skills in completing Task 1. However, students may be able to show their lower-level cognitive skills (remembering, understanding, and applying) in Task 1.

It can also be observed in Table 3 that, for each category of skill, the ratings become higher from Task 1 to Task 3, which suggests that as more elements of the SAROPAS model were added to the task description, the higher possibility the students may demonstrate that specific skill in accomplishing the task. Also, the standard deviations of Task 3 are the smallest among three tasks, which implies that teachers came to an agreement that students will be able to show their respective skills in completing Task 3. The standard deviations in Task 1 suggest that teachers' opinions were diverse toward exhibiting the respective skill in resolving the task. Observing the shrinking standard deviations of each type of skills from Task 1 through Tasks 2 and 3, it can be suggested that teachers' opinions came to an agreement that task elements become clearer and transparently specified.

Table 3. Descriptive statistics (N = 171).

Mean (Std.dev)	Cognitive Low	Cognitive High	Meta-cognitive	Emotional	Social	Physical & Practical	Average
Task 1	3.82 (.79)	3.11 (.96)	2.81 (1.02)	2.31 (1.07)	3.39 (1.14)	3.23 (.99)	3.11 (.99)
Task 2	3.98 (.80)	3.73 (.83)	3.82 (.87)	3.96 (.90)	4.04 (.91)	3.94 (.83)	3.91 (.85)
Task 3	4.57 (.59)	4.53 (.57)	4.54 (.56)	4.64 (.57)	4.57 (.59)	4.59 (.53)	4.57 (.57)

7. Implications and conclusion

This study reported a new model — SAROPAS — for designing performance tasks. SAROPAS contained the elements of a task, including setting/scenario, aim, role, observer, product, action, and standards. To verify the strengths of this design model, a survey was conducted. Three types of task descriptions characterizing different amount of task information were collected. A questionnaire was developed, which consisted of 34 questions asking about if the aforementioned task could help students demonstrate corresponding skills. One hundred and seventy-one in-service teachers participated in the study and completed the questionnaire. It was found that the task containing most elements of SAROPAS obtained the highest ratings with the smallest standard deviations. The task description with the fewest elements the lowest rating but with highest deviation.

These preliminary findings suggested that the SAROPAS model did provide useful guidelines for designing performance tasks. As each task element was clearly specified in the description, students could easily follow the instruction and complete the required tasks. Relevant skills can thus be observed in completing the task items.

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