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Full Length Research Paper

Applying the BEAR assessment system to develop reading competence assessment standards through literature subject of Vietnamese students

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ABSTRACT

Using the BEAR assessment system, the author set up a hypothetical reading competence (RC) developmental continuum and sketched the RC assessment standards, established RC measurement tasks, and described outputs. The author collected real RC evidence based on the cross-sectional study models, then adjusted the developmental continuum and RC assessment standards accordingly. RC geared towards Vietnamese students is comprised of four elements: identify information from text, analyze and connect information, feedback and assess text, and apply information from the text to life with 10 corresponding behaviors. RC developmental continuum (and its elements) is categorized into six different levels in order to help build assessment standards through Literature for senior students in primary schools, and secondary schools. The measurement results of 900 students from Vinh Phuc, Nghe An, Dak Lak provinces show that the RC developmental continuum and the assessment standards are suitable for Vietnamese students; how to build RC benchmark and be feasible with conditions for development of general curriculum in Vietnam.

Keywords: Reading competence, reading literacy, reading competence assessment, reading competence assessment standards, reading competence outcome standard, competence-based curriculum.

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INTRODUCTION

Despite having a good academic basis, Vietnamese students lack critical ability, problem-solving skills and creativeness (Central Executive Committee 2013, Central Committee of the Communist Party of Vietnam, 2013). Therefore, Vietnamese government required the Ministry of Education and Training (MOET) to renovate the general curriculum, textbooks and especially assessments (National Assembly of the Socialist Republic of Vietnam 2014 and the Government, 2014). The development of key competencies in general, Reading Competence (RC) in particular, will change the educational process, shifting the focus on knowledge to what students need to know and can do in different contexts. Since then, it is expected that it leads to the change of quality of the education system - from passive to active states based on competence theory. It helps create positive impacts on each individual and as a result, it contributes to the development of economic and improves the position of Vietnam on the globe.

Reading, listening, speaking and writing are four important skills of the mother tongue program in many countries around the world. Reading is most emphasized because it is closely connected with all fundamental daily activities, and especially people need to process large information from diverse sources. The growing of society demands improving reading skill. Reading is able to understand a written material, in order to use them for the needs of the reader himself, especially for 'lifelong learning'. Therefore, reading comprehension is regarded as one of the three core areas to determine the learner's capacity at the age of 15:

> Reading Literature is no longer considered to be an ability acquired only in childhood during the early years of schooling. Instead, it is viewed as an expanding set of knowledge, skills and

> strategies that individuals build on throughout life in various contexts, through interaction with their peers and the wider community (OECD, 2013).

A number of cognitive theories emphasize the interactive nature of reading and self-constructed nature of the knowledge. This motivates the reader to use different reading processes, skills and strategies according to the context and environment, whether it is paper or electronic documents.

UNESCO has defined reading is the ability to identify, understand, interpret, create, exchange, calculate and utilize written or printed materials associated with different contexts; it requires continuous learning which allows an individual to achieve their goals, develop knowledge and potential and to fully participate in society at large (Do, 2012).

According to PISA (2012), "reading literacy is understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, develop one's knowledge and potential, and participate in society". In this study, *reading literacy* is intended to express an active, purposeful and functional application of reading in a range of situations and for various purposes. According to Holloway (1999), reading skills are essential to academic achievement of middle and high school students. PISA assesses a wide range of students. Some will go on to university; some will pursue further studies in preparation for joining the labour force; some will enter the workforce directly after completing compulsory education. Achievement in reading literacy is not only a foundation for achievement in other subject areas within the education system, but also a prerequisite for successful participation in most areas of adult life. Indeed, regardless of their academic or labour-force aspirations, students' reading literature is important for their active participation in their community and economic and personal life.

The PISA reading literacy assessment is built on three domains: (i) *situation*, which refers to the range of broad contexts or purposes for which reading takes place; (ii) *text*, which refers to the range of material read; and (iii) *aspect*, which refers to the cognitive approach that determines how readers engage with a text. The four situation variables – personal, public, educational and occupational – are described in the following paragraphs. There have been four main text classifications (Medium: print and digital; Environment: authored, message-based and mixed; Text format: continuous, non-continuous, mixed and multiple; Text type: description, narration, exposition, argumentation, instruction and transaction).

As indicated in research results of the SWANs project (Department of Education and Early Childhood Development Victoria, 2011), basic English reading competence for students learning English as a second language in Victoria, Australia is defined as "an ability to create and convey meaning through written symbols and words on the text". It comprises seven elements, which are (i) recognition/ knowledge of symbols or letters, (ii) motivation, (iii) knowledge of letters and numbers, (iv) knowledge of phonology, (v) knowledge of vocabulary, (vi) understanding, (vii) control the production of documents. The behavioral indicators of each element are listed in Table 1.

Using the BEAR Assessment System (Wilson, 2009) to construct the assessment standards of RC enables us to combine world achievements with Vietnamese students' current competence.

According to BEAR, a good assessment must guarantee 4 principles, including developmental perspectives, matching between instruction and assessment, management by teachers through providing regular feedbacks and supervisions, evidence of high quality assessment. The four building blocks that embody them, are shown in Figure 1: (i) Establishing the hypothetical construct map (based on previous research and assessment); (ii) Designing measurement items/tasks based on different levels of hypothetical development; (iii) Describing the output space of given items/ tasks; (iv) Developing the demonstrated competence maps for Vietnamese students.

As stated by Griffin et al. (2012), the construct map (or competence developmental continuum) should be based on 4 main factors, namely learning targets, progress variables, levels of achievement and learning performances. It sketches the future pathways for learners.

Different levels of the competence developmental continuum that is considered the competence assessment standard for each subject will demonstrate what students need to know and what they can do with the content of each subject. For example, the developmental continuum of basic English Reading competence comprises 6 levels as illustrated in Figure 2, which is the assessment standard for this competency.

Vietnam has made a lot of efforts to research scientific bases for the development of a competence based curriculum. The Ministry of Education and Training (2015) has decided some basic shapes in a new curriculum:

> - Determining a group of key competencies for students including, self-study and self-management, problem solving, communication and cooperation, Literature, numeracy, information technology and media, etc;
> - The goal of the new curriculum is "creating a new generation of Vietnamese who are not only mentally and physically healthy but also able to unleash their own potentials; possess noble qualities, a general education and core competencies as a platform for future career options and lifelong learning";
> - Concretized goal of draft outcome of the new curriculum has been considered minimum requirement for graduation (at primary school,

Table 1. Behavioral indicators of basic English reading competence.

Element	Behavioral indicator
Recognition/ Knowledge of symbols or letters	Reaction/ Recognition of pictures
	Attaching picture/symbol to a certain meaning
	Using symbols to convey an idea (using traditional or technology-assisted materials)
	Using the terminology of the printed document (Eg. Identifying parts of the text when required to do so)
	Recognizing the consistent meaning of the printed document
	Recognizing the consistent meaning of the printed letters
Motivation	Taking part in reading
	Taking interest in reading
	Choosing reading materials
	Choosing drawing or writing materials (including papers, pencils, keyboard and mouse, touchscreen, technology-assisted materials)
	Taking interest in drawing or writing activities (using traditional or technology-assisted materials)
	Showing the pride in the drawing or writing activities
Knowledge of letters and numbers	Identifying shapes, letters and numbers
	Connecting letters to sounds (eg. orally or using technology)
	Combining letters and sounds (eg. orally or using technology) in writing activity
	Forming the letters (using traditional or technology-assisted materials)
Knowledge of phonology	Combination of words based on the same first sound (orally or using technology)
	Combination of words based on the same syllable (orally or using technology)
	Syllable segmentation in words
	Syllable blending in words
Knowledge of vocabulary	Predicting the meaning of words
	Identifying types of words and syllable elements
Understanding	Predicting the content of reading material
	Retell the stories or the morals of the readings
Controlling the production of texts	Copying and reproducing words
	Knowing how to present written documents
	Using pen / pencil to write
	Using the computer keyboard touchscreen

secondary school, high school). It is compulsory to demonstrate these shapes clearly and as detailed as possible in subject curriculum. In order to be able to do that, firstly we need to set up a key competences development model and construct an assessment standard for all subjects, then construct a new subject curriculum.

The aim of this paper is to share the research findings on the implementation of the BEAR Assessment System to set up the RC developmental continuum and construct an assessment standard for Vietnamese students, through the Literature subject. This research is funded by Vietnam National Foundation for Science and Technology Development under grant number VI1.2-2011.06, and was commissioned by the Advisory Council to evaluate the result of basis research of Social Sciences and Humanities. The finding of this research has been publicized in a specialized journal with high credibility in Vietnam (Nguyen, 2014a, b, c, d, 2015a; Nguyen and Cuong 2015b; Nguyen, 2015).

METHODOLOGY

Definition and structure of RC

Using the definition of RC from UNESCO, OECD (2004), OECD (2013), ACARA (2013), Griffin et al. (2012), and analysing social

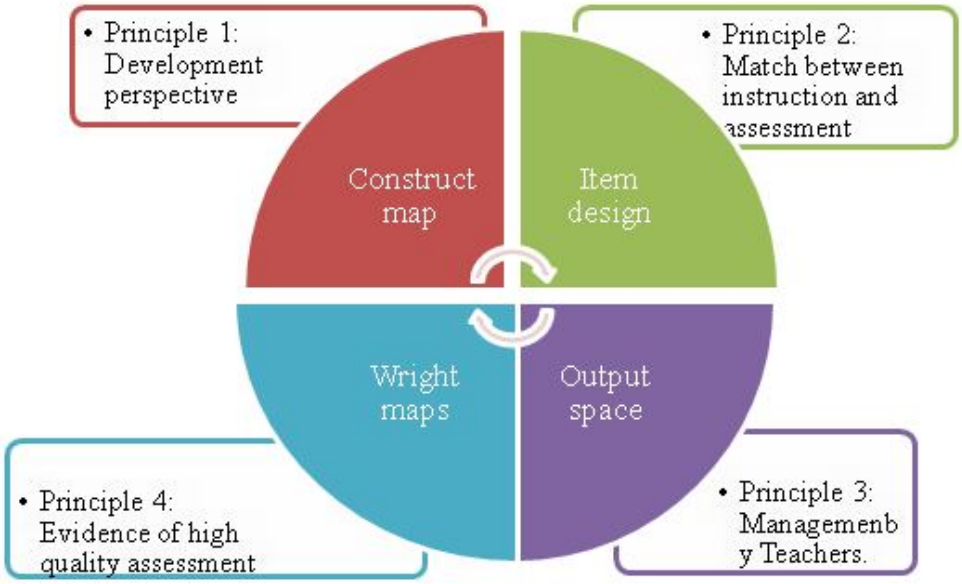


Figure 1. Different principles and stages of the BEAR assessment system.

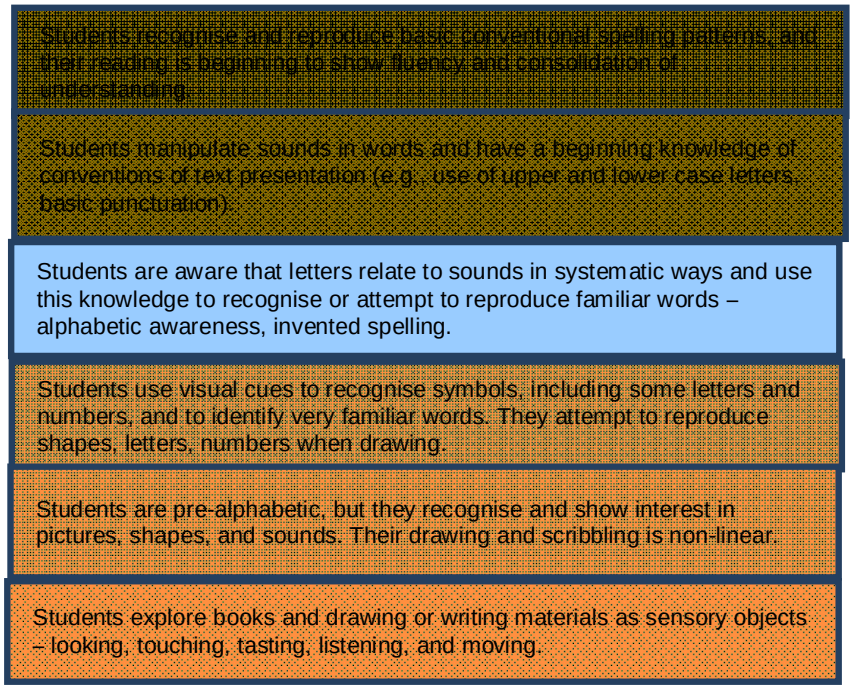


Figure 2. Assessment standards for basic English reading competence of SWANs.

requirements and the conditions of schools in Vietnam, it is proposed that RC is the whole process of direct contact with the text (including the recognition of physical symbols and their meaning); is the process of perception and thinking (receiving and analyzing explain the meaning of the text; discovering the meaning between the lines which is not explicitly available in the texts; finding out the symbols, subtext and the reinterpretation of reader, constructing the meaning of the text); the feedback process, using text (change in perceptions, thoughts, emotions of the reader, to find out the historical significance and the value of the text in different eras).

The RC which is expected to be developed for students in Vietnam is structured by four elements, that is, identify information from text, analyze and connect information, feedback and assess text, applying information from the text to life; each of which factors expressed by some individual behavior (Table 2).

The Reading Competence structure is illustrated as shown in Figure 3.

Table 2. Behavioral indicators of the elements of reading competence.

Elements	Behavioral indicators
Identifying information from the text	Identifying information about the author, origins of texts, etc. Identifying words, details, subjects, topics of the text. Identifying the plot, theme, characters, emotions, plotline, message,etc of the text
Analyzing, connecting information of the text	Connecting the basic ideas from the information in the text (such as personality traits, qualities of character; their actions; the words and rhetoric in writing; knowledge of social issues, literature, and practical experience, etc) Collating, analyzing the information, the main idea of the text through the knowledge and personal experience. Generalizing the information on the content and the art of writing
Giving feedback and assessing the text	Commenting, assessing the values, ideas of the text, and inspirations of the author through the connection and comparison with external contacts and personal experience; Generalizing theoretical issues such as style, era, the creative process, etc Drawing on the lessons and message of the text
Applying information from text into reality	Applying the text information to solve the everyday problems; Knowing how to generalize the reading process into methods for similar texts or the other contents and subject matter. Drawing on the ideological meaning, the personal value from the writing

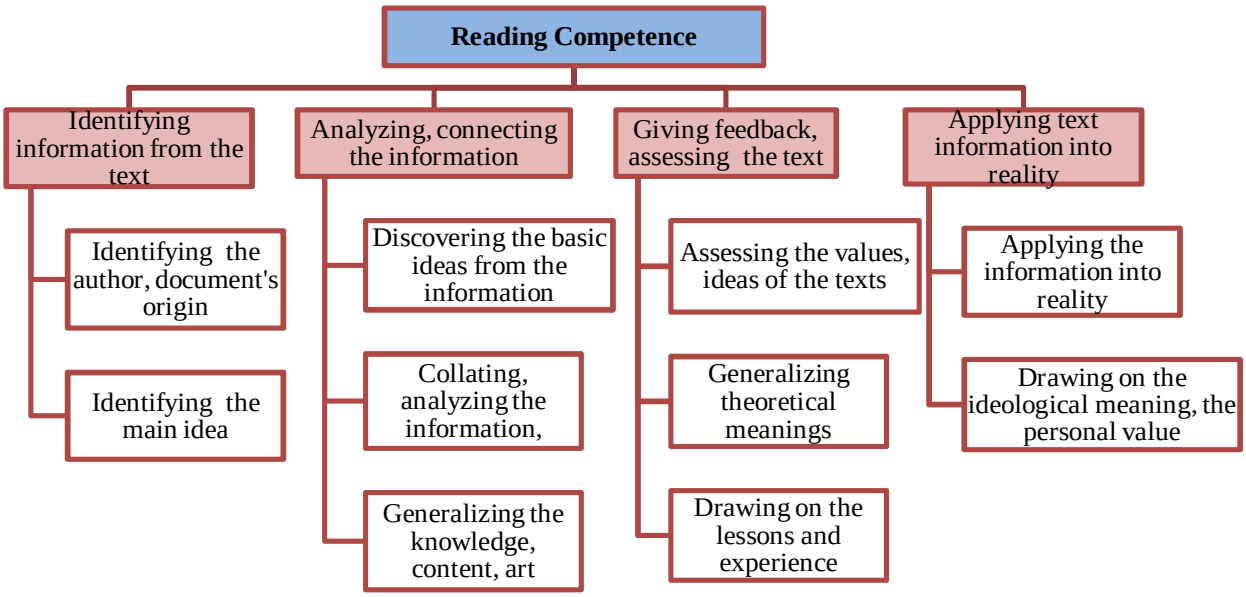


Figure 3. RC Structure (4 element skills and 10 behavior indicators).

Basic theories

The construction of assessment standards of RC is based on the following three theories:

(i) Lev Vygotsky launched models of cognitive development of students include: The Zone of Actual development (ZAD) is that the psychological functions reach maturity (shown when children solve tasks without outside helps); Zone of Proximal Development (ZPD) where the psychological functions are mature but not ripe (only shown when children complete the task with the help of others). Figure 4 simulates this; the left column is classified from easy to difficult missions and latent capacity of students to simulate the 2-way from low to high (bottom up). For example, one student with ZPD1 including tasks {T2, T3, T4} needs help and support, and the student with ZAD1 {T5, T6, ..., T11} have complete mastery as a whole.

(ii) Georg Rasch introduced the probability model to a person

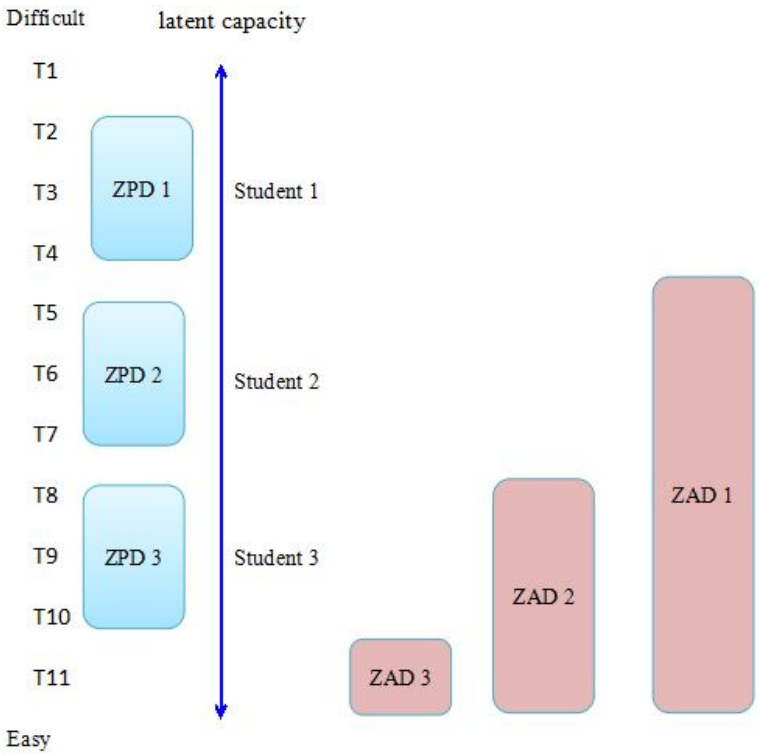


Figure 4. Current development zone and proximal development zone of students (by Vygotsky).

properly qualified to answer difficult Items by the formula b. This formula can help to locate the student capacity and the difficulty of the Items on the same scale. Especially, when the student capacity equal to the difficulty Item the probability comply acts 0.5.

Item response theory (IRT) has modeled the interaction of each individual with items to estimate the capacity as well as the difficulty for each item by Maximum likelihood method on the difference between 'a' and 'b'. Finally, assign each student a capacity value and a value to each item on the difficulty value, and then put them on the same logit scale.

There are 2 types of specific models of CONQUEST software that will be applied to the construction of assessment standards of RC, namely Partial Credit Model as students interact with multiple distribution items (there are more than one correct answer), and Multidimensional Item Response Models can measure many different directions in a hidden variable, with two forms of multidimensional between-item tests, that is, each item is a one-dimensional indicator of latent variables; and multidimensional within-item tests, that is, each item is a multi-dimensional indicator of latent variables (Wu and Adams, 2007).

(iii) Robert Glaser developed theoretical framework of criterion-referenced interpretation, each criteria (the behavior criteria) is considered in a system of knowledge and skills that ties close and fulfilling the criteria will describe the level of development of human capacity to learn (Figure 5).

Hence, the theory of Glaser helps simulate the learning progress in a way capacity development and explain the study results under that level of development;

Research model

Based on the BEAR assessment system (Wilson, 2009), the development of RC assessment standards includes four stages (Figure 6):

(i) Draft a hypothetical RC assessment standards includes developmental continuum model and assessment standards;
(ii) Design measurement tasks of RC includes test blueprints, tasks and items development
(iii) Describe outcome spaces of the tasks: Describe the outputs of each task or item and arrange the level of implementation of tasks or item;
(iv) Adjust RC assessment standards: Measure RC of experimental student; encode outputs; analyse capability maps; adjust the development continuum and RC assessment standards.

This project is also designed in the cross-sectional study model (known as a time study). From the overall Vietnam students, 3 representative groups were chosen at the end of primary school level (grades 4 and 5), lower secondary school level (grades 8 and 9), lower secondary school level (grades 11 and 12). All three groups of students are measured RC at the same time suitable for determining target levels of RC development, based the reference of hypothetical development continuum and estimates the difficulties of the tasks that the students interacted (Figure 7).

Participants and data collecting process

Three groups with 900 students participated in experimental prcess in October 2014. The sample was collected in two stages: (i) Select a district in the area with average socio-economic conditions in Vinh Phuc, Dak Lak and Nghe An, then choose two (2) primary schools, two (2) lower secondary schools, two (2) upper secondary schools

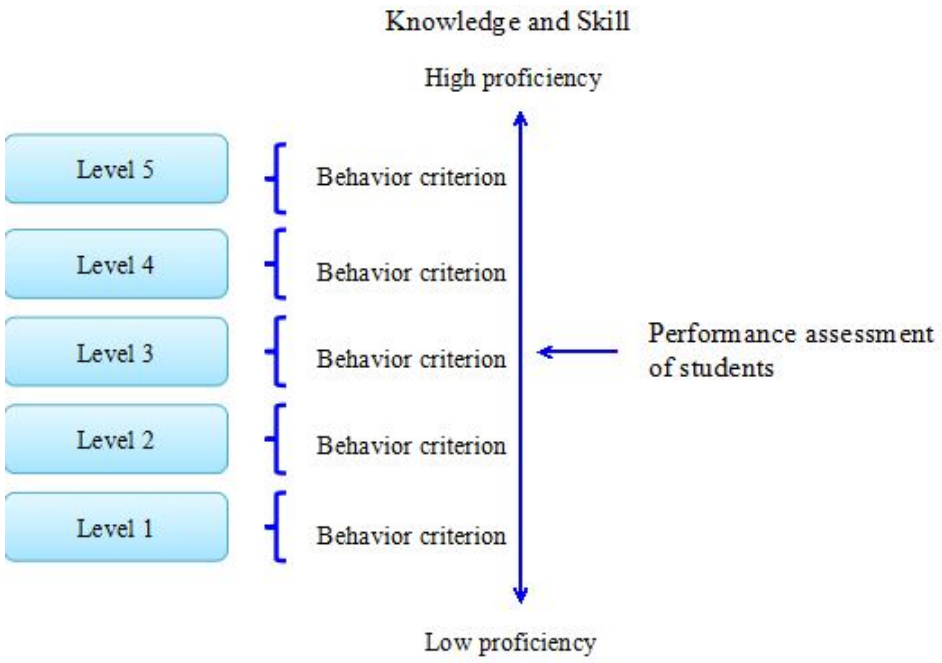


Figure 5. Chart of the capacity development level of Glaser.

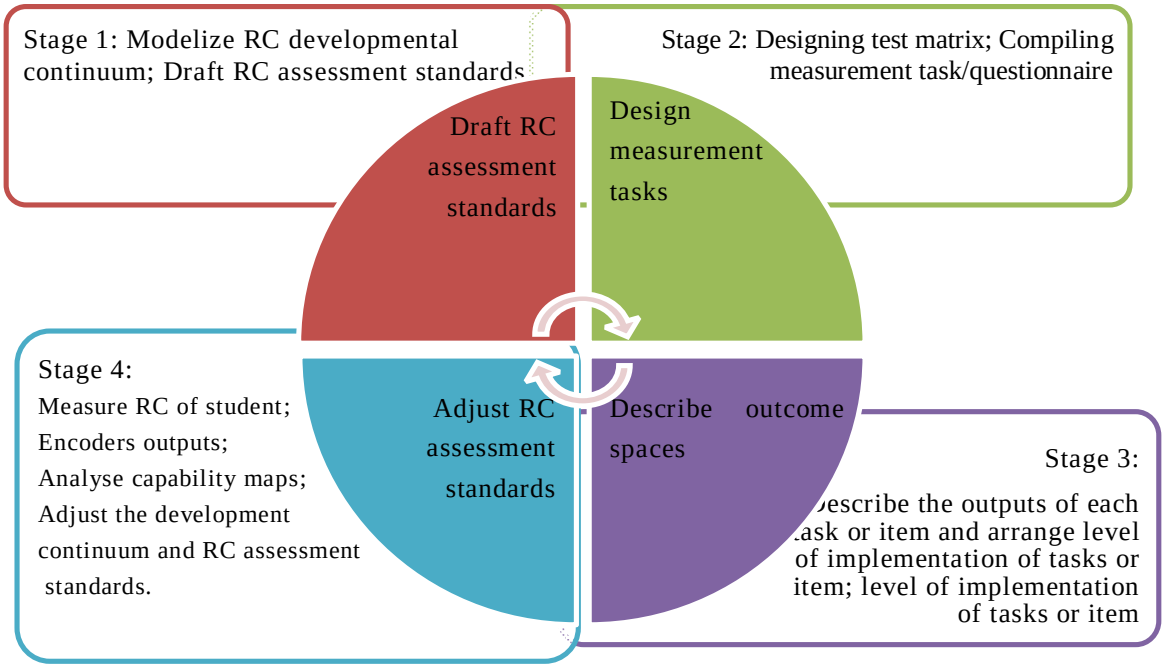


Figure 6. Four stages of RC assessment standards development.

in each district[1]; (ii) Randomly select 50 students from each school, in which: 20 in grade 4, 30 in grade 5; 20 in grade 8, 30 in grade 9; 20 in grades 11, 30 in grade 12.

[11]Yen Lac District,Vinh Phuc: Tam Hong 1 and Yen Lac Primary schools, Tam Hong and Yen Lac Town lower secondary schools, Dong Dau andYen Lac upper secondary schools;
Cu M'Gar Distric, Đak Lak: Quang Trung and Le Loi Primary schools, Luong The Vinh and Nguyen Thi Phuong lower secondary schools, Le Huu Trac and Cu M'Gar upper secondary schools;
Nghi Loc District, Nghe An: Quan Hanh and Nghi Trung Primary schools, Quan Hanh and Nghi Trung lower secondary Schools; Nghi Loc 3 and Nghi Loc 4 upper secondary Schools.

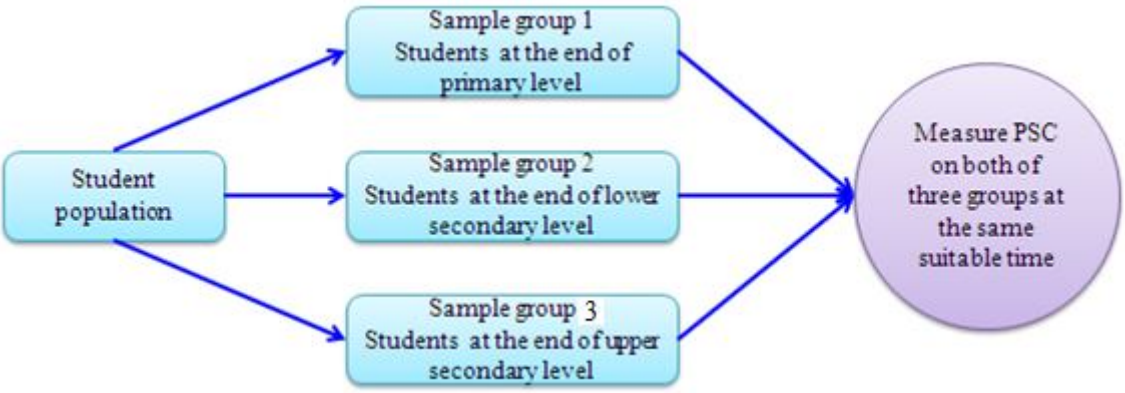


Figure 7. Cross-sectional study model for RC in Vietnam.

Participants were classified into classrooms according to their ID and there were 25 students per room. The investigators would directly discuss with students on the importance of participating in the experimental tests, instruct them how to interact with assessment tools, and explain requirements (seriousness, effort) during the test procedure. Investigators and teachers supervised the whole testing time.

RESULTS

The author introduces a summary of the final results in four stages shown in Figure 6.

Draft a hypothetical RC assessment standard

According to the reference of RC development continuum from PISA (2003), PISA (2012), Griffin (2014),… and the result of Vietnamese students (by large – scale assessment in 2011, 2014, PISA 2012, PASEC 10) and the results of small surveys carried out among 1000 students in Experimental Schools of National Institute for Educational Sciences (VNIES), RC developmental continuum with 5 levels was illustrated in Table 3.

Table 4 describes in details the draft of RC Assessment Standards for students at grades 5, 9 and 12, which not only is suitable with the 5 levels above but also clearly demonstrate the element skills and their behavior indicators (Figure 3).

Design measurement tasks of RC

Although there are a number of possible tools that could be used to assess the competence, Literature test is used to illustrate the method of measuring RC in this research paper. There are two steps in the designing process: i) Design the tool (version 1) based on the draft assessment standard and the result from small survey carried on 150 students in Hai An Commune, Haiphong Province[2] (December, 2013) in order to assess the items; ii) Adjust the tool (version 2) and conduct the survey officially on 900 students in order to adjust the RC assessment standards.

Test blueprints (90 minus) for 3 groups of students have two dimensions. One was about 4 elements and the other was about different levels of RC development. There were behavior indicators in each matrix square (which was described in Table 3). There were 40 items for students at primary school, 40 items for lower secondary students and 40 items for upper secondary students. There were common items for tests equating. Table 5 showed the test matrix for primary school students. The other two tests were similar.

Each task/Item (MCQ or essay) measures the behavior outlined in the test matrix. Many Items are grouped together under a certain text. Each Item is designed in four dimensions: (i) The elements of reading competence and their behavior indicators; (ii) The level of development of such elements; (iii) The background and context of use; and (iv) Subjects of reading competence (including formal documents or informal documents).

Outcome spaces of the tasks

There are two types of item in the RC tests:

1. MCQ is coded 1 for correct answer, and 0 for incorrect answers. Besides, code 8 for doing wrong instructions and 9 for not attempt item.
2. Constructed-response item, the number of codes depends on the number of solutions and the numbers of criteria corresponding with behavior. The codes 8 and 9 are similar to MCQ.

The following examples illustrate task modeling in the test

[2]Small survey schools: Nguyen Truong To primary school, Le Chan secodary school, and Le Quy Don hight school

Table 3. Hypothetical RC developmental continuum.

Level	Description
Level 5 Interprete the meaning of the text in everyday life	Suy nghĩ, bình luận, kiến giải ý nghĩa tư tưởng và các giá trị của văn bản trong cuộc sống, vận dụng vào các giải pháp và bối cảnh mới. Thinking, commenting, interpreting the ideological meaning and values of the text in everyday context; applying them into the solution and new contexts.
Level 4 Apply information on hypothetical or practical situations	Using the information from text and other sources or personal experience to solve the hypothetical or real life problems which are elicited from the text.
Level 3 Generalize the values in content and art of the text	Connecting the relationships within and outside the text to comment on the value of the content and the art of the text, the creative ideas of the author, and the subtext.
Level 2 Identify the main idea of the text	Connecting the information from the wording, the context to identify the basic ideas of the text
Level 1 Recognize the explicit information of the text	Pointing out the relevant information which is presented in the text: author, history/origin of the text, words, details, characters, thereby recognizing the subjct and the content is mentioned in the text

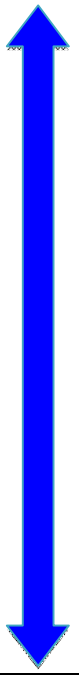


Table 4. The draft RC Assessment Standards for general education students.

Level	Grade 5	Grade 9	Grade 12
1	- Identify some words, and the main idea of each paragraph in the text - Make the connections between words and what things, specific phenomena they represent to identify the information in the text		
2a	- Understand the details that constitue the text - Make connections with some information and explain their use in the text		
2b	- Link the words (phrase or short sentence) from this context to one another on the condition that there are suitable words between the contexts in the text - Make comments on some information in the text	- Explain words, main idea of the text - Link the words from this context to one another on the condition that there are suitable words between the contexts in the text - Analyze of the relevance of texts to different contexts and audiences	
3a	- Summarize and generalize the main content, meaning and value of the text - Make connections between the information, details, main ideas of the text and the knowledge, personal experience	- Summarize and generalize the main content, meaning and value of the text - Collate the information, details, main ideas of the text with one's knowledge and personal experience	

Table 4. Continues.

3b	- Read different provided texts of the same type while discovering and receiving ideas and content, on the basis of making connection between information and relationships within the text.	- Self-read the provided texts while discovering and receiving ideas and content, on the basis of making connection between information and relationships within the text.
4a	- Expand the methods of reading in order to connect the new information to the previously read information, to link ideas from different parts of the text and demonstrate the ability to firmly grasp the ideas of the author.	-Read an extra-curricular text forward or backward in order to connect the new information to the previously read information, to link ideas from different parts of the text and demonstrate the ability to firmly grasp the ideas of the author. – Present ones' own opinion; propose a solution for a problem based on the application of problem-solving ability within the context of the text.
4b		Make connections with external factors (reflection, comparison) to comment and assess of the value of the text and the ideas of the author, to generalize the theoretical issues (styles, eras, creative process, etc)
5		- Express thoughts, unique and insightful commentary on the ideological meaning and values of life through the text - Demonstrate the deep personal insights in detecting and solving the problems that arise, applying them within the context of the text.

at Secondary schools.

Text 7:

Outside the window, crepe myrtles have become sparse – the type of flower that turns pale right after blossoming. Maybe the weather is coming to an end and flowers are withering, so the final surviving flowers are more vivid than ever (..). Across the crepe myrtle trees, weather in the first days of the autumn has brought to the Red River a pale red colour, and the river surface seems to widen. The dome of sky is also apparently higher. The early morning's sun rays is moving slowly from the water surface to other river sides, and in front of the house's window, the long-standing alluvial plain of the warp on the other Red River side exposes a golden yellow colour alternating with mild green – which is incredibly familiar just like skin and flesh, or a breath of the fertile soil. For his whole life, Nhi has been to every nook and corner of the Earth, but there is a horizon that is so close, yet so far as he has never visited it - the other side of the Red River right in front of his house's window.

(*Homeland's Wharf* – Nguyen, Minh Chau, Literature 9)

Item 38. What does the following sentence mean?

For his whole life, Nhi has been to every nook and corner of the Earth, but there is a horizon that is so close, yet so far as he has never visited it - the other side of the Red River right in front of his house's window.

Table 5. RC estimating matrix test for lower secondary school students (at grade 8 and 9).

Level	Identify information	Analyze and connect information	Assess and give feedback	Personal insights
5			Nhận xét, vận dụng vào tình huống thực tiễn Item 29	
4	Generalize the main content of the text Item 12, 28	Connect the ideas from the different parts of the text Item 34, 38	Reflect and compare to connect with the external factors Item 9, 8	Express thoughts and comments on life values through the text Item 35, 40
3	Identify the theme and topic of the text Item 15, 17, 33	Connect the new information with the previously read information Item 4, 22, 26, 31, 32, 37	Apply the acquired information into solving the problem within the context of the text Item 27	Draw on personal lessons from the text Item 5, 10, 16
2	Identify the content and main details of the text Item 1, 11, 20, 21, 36, 39	Point out the rhetorical devices of the text Item 3, 6,19, 23, 24, 25, 30	Present an opinion and solution to solve a problem within the context of the text Item 13, 14	Express thoughts, comments on the ideological meaning of the text Item 7
1	Identify words, main ideas of the text Item 2, 18			

A. Nhi's own insight about his paradoxical life.
B. Nhi's feeling of sadness since he has never walked outside his house.
C. Nhi has never thoroughly understood the beauty of his homeland.
D. Nhi is only until now able to fully understand the beauty of his homeland.
Measurable behavior and element: Linking ideas from different parts of the text, of the element 'Identify information';
Developmental Level: 5
Situation, context of use: Personal
Subject of Reading: Artistic text
Encoding student's response:
- Code 1: A*;*
- Code 0: choose another option;
- Code 8: choose more than one option;
- Code 9: choose no option.

Item 39. Please list three images of Nhi's feeling about the beauty of homeland from the text
Measurable behavior and element: Assessing the ability to collect information from the text, of the element "Assess and give feedback'
Developmental Level: 4
Situation, context of use: Personal
Subject of Reading: Artistic text
Encoding student's response:
- Code 2: Provide 3 from the following images: Crepe myrtles, weather in the first days of the autumn, early morning's sun rays, the other river bank, Red River
- Code 1: Provide 1 or 2 above images
- Code 0: Provide no correct image
- Code 9: No answer

Item 40. Your thoughts about Nhi's feeling from the above text
Measurable behavior and element: Expressing thoughts, comments on values of life through the document, of the element "Personal insights"
Developmental Level: 5
Situation, context of use: Personal
Subject of Reading: Artistic text
Encoding student's response:
- Code 2: Present one's thoughts about Nhi's feelings in some directions: the deep sorrow of a bedridden man that derived from his love of life and homeland; his sensitive soul and its reaction to the changes of nature of life, which reflects the character's feelings; the will to live and aspiration towards the beauty of his homeland, etc.
- Code 1: Ambiguous ideas
- Code 0: Wrong answer
- Code 9: No answer

Adjust RC assessment standards

After being collected, encoded, entried and cleaned, data is analysed and processed according to IRT models by the CONQUEST software. The difficult levels of items in three tests are taken to a common scale (throught common items) by the concurrent calibration method. Specific parameters for each item are provided in the Annex.

By using the Multidimensional Models, it can be seen that the map in Figure 8 shows the balance between the students' competence and the difficulty level of elements RC in the same scale. The first four blocks are the distribution of students' competence respectively in the following elements of RC, which are (1) Identify information, (2) Analyze and connect information, (3) Assess and give feedback, and (4) Personal Insights; and the last block represents the difficulties of all the Item items in the 3 test. Students whose positions is corresponding horizontally with a item, then the probability that they will answer correctly that item is 0.5; when they get the higher or lower positions than a item, the probability of giving a right answer is respectively higher or lower than 0.5. Figure 8 shows that:

i) The development of the competency of the students in the first two elements are similar, and the fourth is the lowest; the average competency of each element are at respectively 1, 1, 0 and -0.3.
ii) Overall the test Items have difficulty spreading all developmental levels of student's competence. However, some of the test Items are unnecessarily easy for primary school level (Items 32, 21, 20…) since all students have higher positions; on the other hand, two Items are relatively difficult for high school level, which are Items 31 (primary school test), 116 (high school test).

The assessment standards of RC are adjusted through 4 steps:

i) Setting 5 cut-off scores to distinguish 6 different levels of RC development using Bookmark method (Lin, 2006), based on the difficulty level of items of the test. These cut-off scores are -2.04, -1.12, -0.05, 0.97, and 1.99 (Figure 9);
ii) Readjustment of measurement skill of each item (has already identified in the test matrix) based on the difficulty level and the above cut-of scores;
iii) Generalization about the nature sign for each of the RC development level through the content of Literature. Figure 10 demonstrates this adjusted RC developing continuum – it is illustrated using the double arrows with the implication that the levels of development can be adjusted on both sides depending on the cognitive levels, lower than 1 or higher than 6. In addition, we also make ageneralization about the nature signs for each development level corresponding to each element of RC; and
iv) On the basis of RC Structure (based on Figure 3) and 6 levels of each element development (based on Figure 10), an adjustment can be made in the final RC assessment standard at the Primary, Secondary and High school levels. This process was also discussed and consulted with many curriculum and education experts, together with the teachers from the school involved in the experiment.

Table 6 gives detailed description of the final RC assessment standard.

Establishment of illustration form for RC assessment standard through Literature

The author established the illustration forms for each development level in each block of RC that the assessment standards has already been identified from the test results of the students participating in the standard experiment. Table 7 demonstrates the final RC assessment standard at lower secondary school.

DISCUSSION

(i) The research results from a number of projects (PISA, ATC21S, SWANS…) have shown a diverse picture of RC: concept 'Reading' and 'Reading conpetence'; development methods for RC (individual or individuals working together), text type,…. With each method, RC will be formed and developed under a specific structure. Many countries in the world including Vietnam are undergoing the stages of exploring the effective methods for RC developments. This study has applied BEAR assessment system to: (a) Establish RC developing continuum 5 levels for Vietnamese students on the basis of its 4 elements and 10 behaviours structure; (b) Develop the RC assessment standard through the content of Literature; and c) Establish the illustration form for the RC assessment standards.
(ii) Our research results and methodologies have some new points compared to the experience of developing general education curriculum in Vietnam. These points are listed as follows:

a) Focusing on RC development for individuals when they analyse text (Medium print and digital; Text format continuous, non-continuous, mixed or multiple, Text type description, narration, exposition, argumentation, instruction and transaction) because most of the teachers do not have the enough capacitíes to design the real tasks according medium digital; ICT environment in schools is relatively backward;
b) Applying the BEAR assessment system, which is enables us to refer to the world research achievements

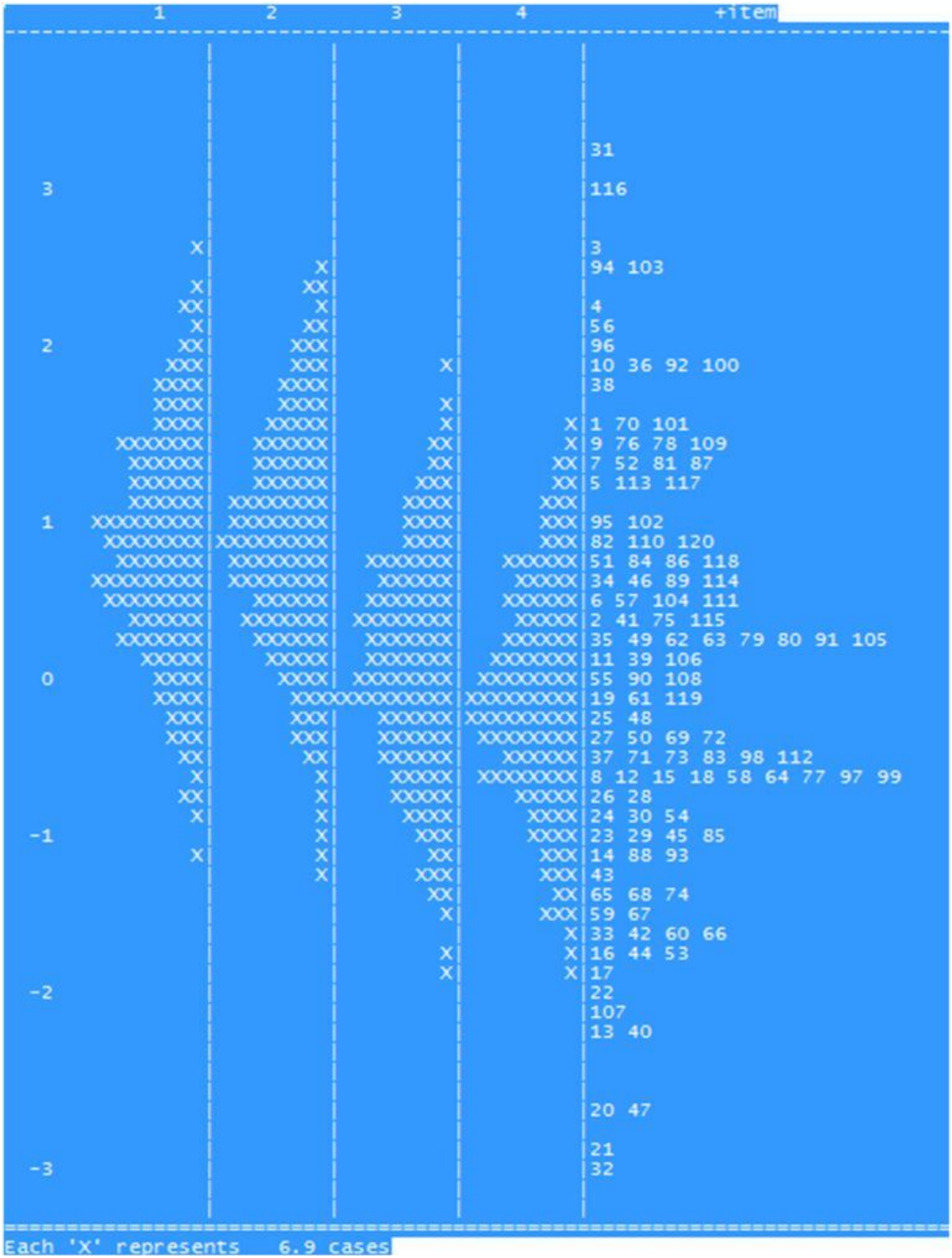


Figure 8. The balance map between the difficulty level of the elements and students's competence.

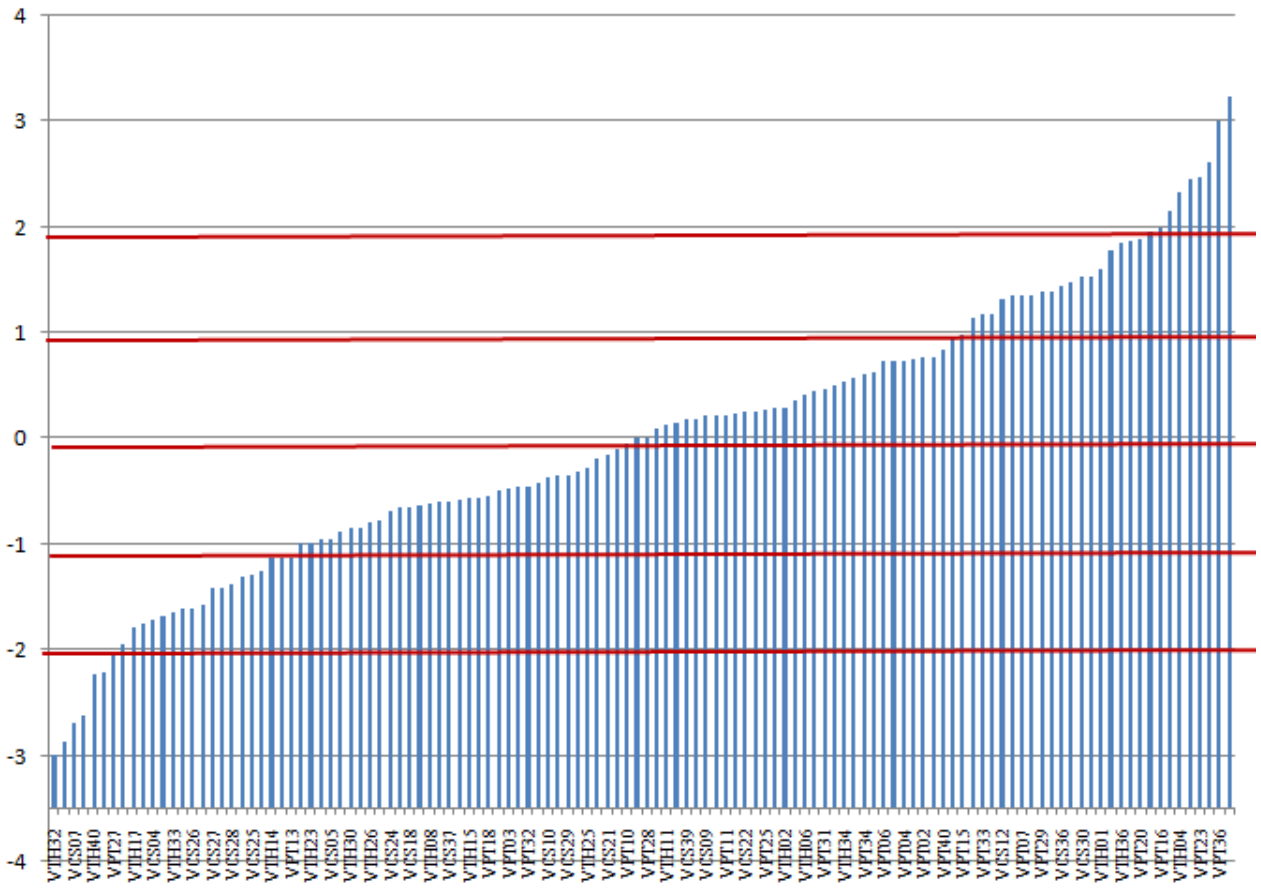


Figure 9. The cut-off scores on the scale of difficulty level of the items about RC.

(when outlining the RC developing continuum and RC assessment standards), and also to establish a RC development model suitable for Vietnamese students (when adjusting the RC developmental continuum and RC assessment standards from experiment);
c) Although the IRT model and cross-sectional assessment model are commonly used in broad national assessment, they have never been used to develop the standards in general education curriculum. In our proposal, by using cross-sectional assessment model will lower the cost for standard establishment and still ensure the necessity of scientific theory; IRT will allow to visualize RC more clearly (the latent variables of learners), and provide practical demonstration for adjustment of the initial assumed RC developmental continuum.

(iii) Shapes for the new general education curriculum have been identified (the goals, outcome standard requirements, educational stages, areas and subjects, integration and differentiation, etc). However, how to represent them in subjects poses series of challenges for Vietnam, especially in the context of the unprecedented development of the competence based curriculum. One of these challenges is developing the outcome standards and assessmentstandards of the curriculum. Therefore:

a) Developing the assessment standards based on the BEAR assessment system is considered as a new direction, an effective method to overcome this challenge;
b) The way of developing RC assessment standards through the content of Literature (test matrix structure, measurement task/item designed in three axes, encoding of various ways to perform tasks) is considered as a demonstration for RC assessment standards development through the content of different subjects/areas in the new general education curriculum;
c) 4 step process applying BEAR to establish RC developmental continuum, 4 step process to adjust RC assessment standards is also considered as a demonstration for developing continuum and establishment andassessment standards for other general competences in the general educational curiculum.

(iv) Buiding the competence assessment standards through subjects as the author proposed may have a number of advantages and disadvantages.

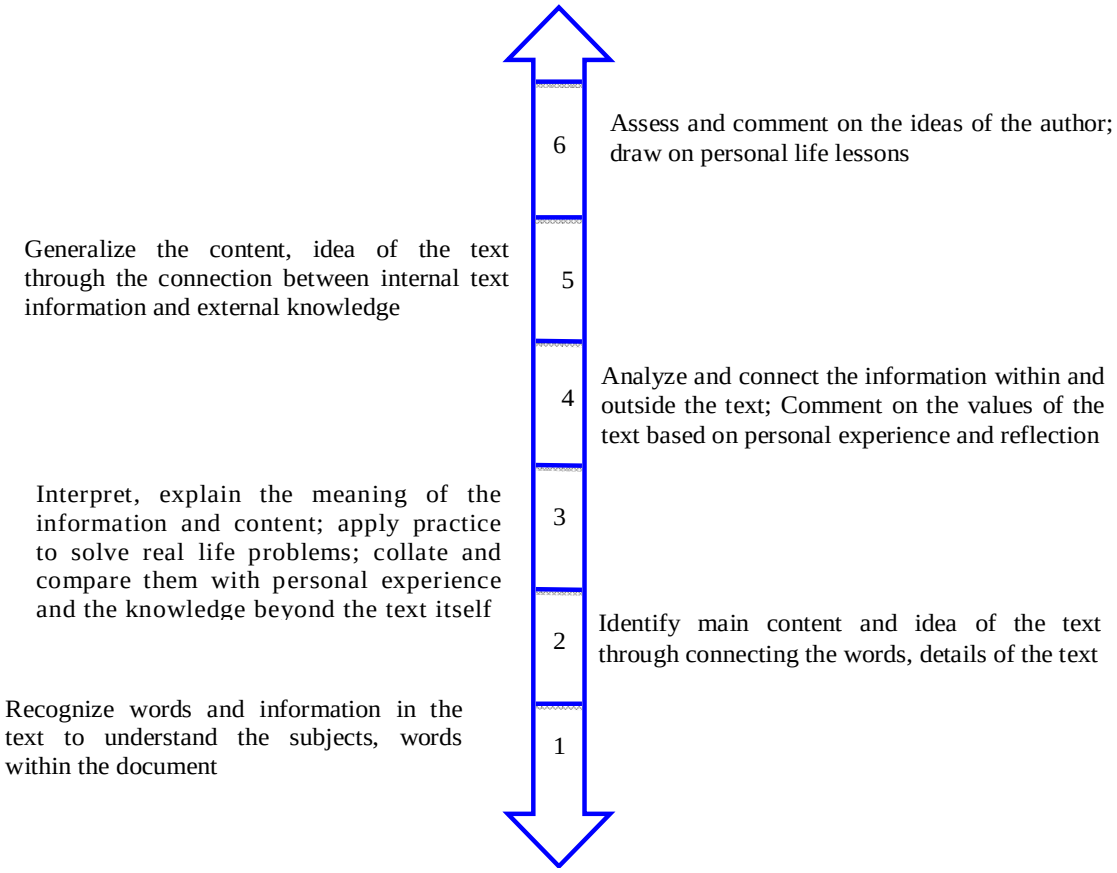


Figure 10. The adjusted RC developing continuum through Literature subject.

Advantages

i) Building the competence assessment standard for general education curriculum according to 4 stages/phases of BEAR assessment system can be feasible and effective in Vietnam since many other countries in the world have already applied it successfully when developing the educational assessment system as well as the educational curriculum;
ii) The way of establishing competence developmental continuum and building competence assessment standard as proposed have not only applied the world research result (when identifying concept, competence structure, outlining the assumed competence development model, and outlining assessment standard), but also make adjustment so that it can be suitable for competency level of Vietnamese students (when measuring the competence of students involved in the experiment by using a set of tools designed according to the outlined assessment standard);
iii) It is possible to use the RC developing continuum and RC assessment standard by means of this trial method to review and readjust the RC outputs in each school level, which has already been outlined by the expert method.
iv) The process for RC developing continuum establishment and RC assessment standard construction is relatively clear and easy to follow. This is a good illustration that can be applied for the developing continuum establishment and other competences assessment standard construction.

Disadvantages

i) In the framework of research project, the samples were selected in a way that facilitate the implementation, not follow the rule of professional sampling. Therefore, the developing continuum and the RC assessment standard are not generalized, but mostly appear as the illustration for the method and process;
ii) It is essential to invest certain time and expenditure for developing continuum establishment and assessment standard construction by trial method. This could impact greatly on development plan of new general education curriculum that MOET has planned (curriculum construction of all subjects within 1 year);
iii) To deploy the above mentioned process, it is necessary to provide training for experts about the establishment of competence developmental continuum and competence assessment standard description;

Table 6. Adjusted RC assessment standard through Literature.

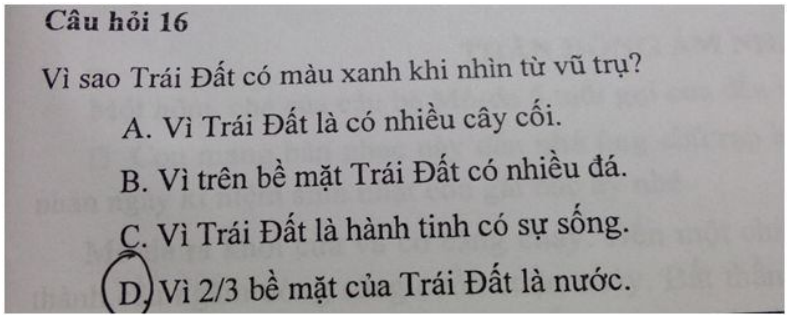
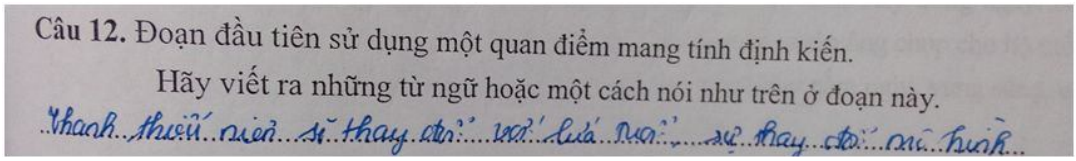
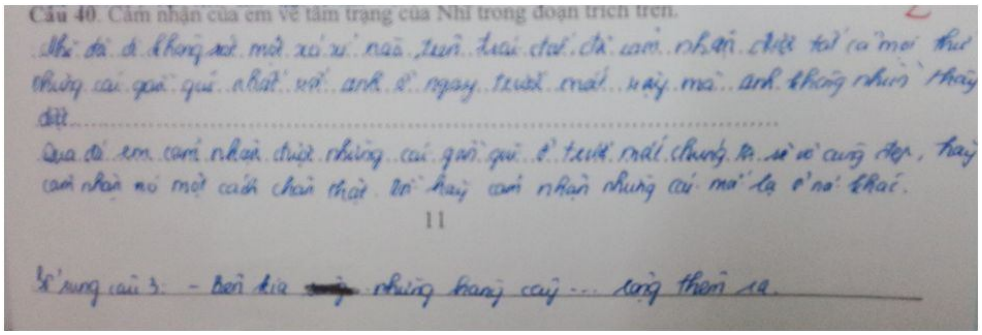
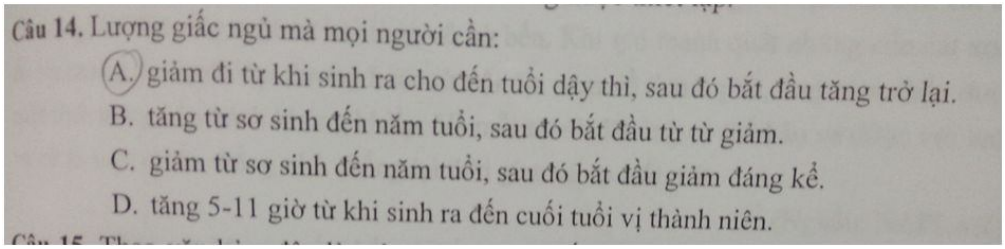
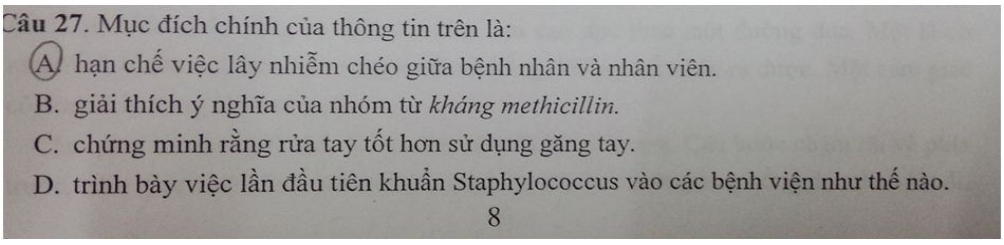
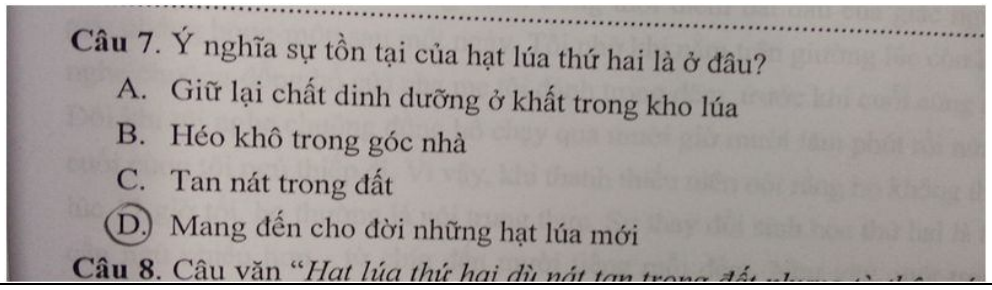
Level	End of elementary school level	End of lower secondary school level	End of upper secondary school level
6	- Make initial comments on the text and draw on personal lessons from the text	- Make comments and initial assessment on the author's ideas through the text, draw on personal lessons from the text	- Express thoughts, unique and insightful commentary on the ideological meaning and values of life through the text - Demonstrate the deep personal insights in detecting and solving the problems that arise, applying them within the context of the text.
5	- Initial connection from the text to identify the real life problems	- Expand the methods of reading in order to connect the new information to the previously read information, to link ideas from different parts of the text and demonstrate the ability to firmly grasp the ideas of the author.	Make connections with external factors (reflection, comparison) to comment and assess of the value of the text and the ideas of the author, to generalize the theoretical issues (styles, eras, creative process, etc)
4	- Summarize and generalize the main content, meaning and value of the text - Make connections between the information, details, main ideas of the text and the knowledge, personal experience	- Read the provided texts while discovering and receiving ideas and content, on the basis of making connection between information and relationships within the text.	-Read an extra-curricular text forward or backward in order to connect the new information to the previously read information, to link ideas from different parts of the text and demonstrate the ability to firmly grasp the ideas of the author. – Present ones' own opinion; propose a solution for a problem based on the application of problem-solving ability within the context of the text.
3	- Link the words (phrase or short sentence) from this context to one another on the condition that there are suitable words between the contexts in the text - Make some comments on the basic information in the text	- Summarize and generalize the main content, meaning and value of the text - Collate the information, details, main ideas of the text with one's knowledge and personal experience	- Self-read the provided texts while discovering and receiving ideas and content, on the basis of making connection between information and relationships within the text.
2	- Understand the details that constitue the text - Make connections with some information and explain their use in the text	- Explain words, main idea of the text - Link the words from this context to one another on the condition that there are suitable words between the contexts in the text	- Explain words, main idea of the text - Analyze of the relevance of texts to different contexts and audiences
1	- Identify some words, subjects in the text; Make connections between words and the things, specific phenomena that they represent in the text, in order to identify the information in the text	- Identify words, information in the text; understand the meaning of subject through connecting the words which are explicitly conveyed in the text	- Understand the meaning of words, information of the text; understand the text through connecting the words which are explicitly conveyed in the text.

curriculum experts and teachers about the method to establish the competence measurement task and the outcome space description; experts about assessment of dedicated software utilization for IRT.

Conclusion

Developing the competence based curriculum always requires a model of competence development and competence assessment standard, thereby compiling the curriculum, teaching and assessing leaners. It is possible to apply the BEAR assessment system to construct the RC assessment standard undergoing the following stages: i) establish RC developmental continuum and outline the assessment standard, ii) design the RC measurement tasks, iii) describe the outcome space for those tasks, iv) establish the proof map for RC of

Table 7. Illustration forms for RC assessment standard at lower secondary school.

Level	Example illustrations for RC assessment standards
6	
5	
4	
3	
2	
1	

students, v) adjust the RC developing continuum and competence assessment standard based on empirical proof.

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