

Compatibility between Independent Activities in the Course of Study for Schools for Special Needs Education and ICF Categories

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Abstract

In the 2009 amendment to the course of study for schools for special needs education, the new teaching guideline “independent activities” was introduced to teach skills that ease difficulties in learning and daily living. The present study aimed to clarify compatibility between the independent activities and ICF categories by conducting a survey of teaching staff in schools for special needs education. The independent activities consist of 6 major items accompanied by a total of 26 sub-items. The ICF involves 4 components: body functions and structures, activities and participation, environmental factors and personal factors. Thirty items at the first level of classification were employed for the present investigation, excluding personal factors. The independent activities were linked not only to activities and participation in the ICF, but also body functions and structures and environmental factors. Amongst the independent activities “psychological stability” had the largest degree of compatibility with ICF items (15 items); while “health care” and “understanding situations” had the smallest number (6 items). The results suggest that a combined use of independent activities and ICF categories provides a more useful and quantitative foundation to assess the independent activities and to facilitate individual teaching plans.

Introduction

In 2009 the Ministry of Education, Culture, Sports, Science and Technology (MEXT) amended the course of study for schools for special needs education in order to respond to recent changes in social structure, progressions in the severity, multiplication and diversity of disabilities and to provide appropriate teaching and support for the educational needs of individual students with disabilities [1, 2]. In particular, the new teaching guideline “independent activities” was introduced to improve and overcome difficulties in learning and daily living due to their disabilities [3]. Independent activities emphasize understanding difficulties in learning and daily living due to disabilities in relation to the International Classification of Functioning, Disability and Health (ICF) issued by the World Health Organization (WHO) [4]. The ICF provides a framework for the description of health and health-related states and consists of four components, i.e. body functions and structures, activities and participation, environmental factors and personal factors (Fig. 1). The term “functioning” refers comprehensively to body functions and structures, activities and participation

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while “disability” is similarly an umbrella term for impairments, activity limitations and participation restrictions. The functioning and disabilities are closely related to the environmental and personal factors.

In order to promote independent activities in schools for special needs education, it is more important to assess the actual conditions of students with disabilities and to develop individual teaching and support plans based on their functioning and environmental factors. Sakai et al. [5] and Sakai [6] reported a close relationship between the contents of the independent activities and the categories of the ICF. However the ICF includes more than 1400 items. Kawai et al. [7] suggested that the assessment of functioning in terms of the ICF did not encompass all the domains, but should be limited to functioning associated with educational needs and objects listed in the independent activities.

The present study aimed to clarify compatibility between the independent activities and the ICF categories by conducting a survey of teaching staff in schools for special needs education.

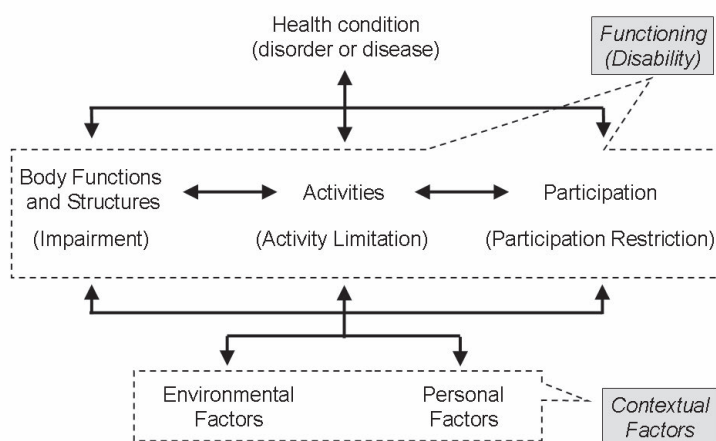


Fig. 1 Interactions between ICF components

Methods

Independent activities in the course of study for schools for special needs education consisted of 6 major items: A, health care; B, psychological stability; C, interpersonal interactions; D, understanding situations; E, movement and mobility and F, communication (Table 1). Each item was accompanied by 3 to 5 sub-items (total 26 sub-items). The ICF involves four components: body functions and structures, activities and participation, environmental factors and personal factors (Fig. 1). Thirty items at the first level of classification were employed for the present investigation, i.e. 8 items in body functions, 8 items in body structures, 9 items in activities and participation and 5 items in environmental factors (Table 2). Personal factors were not used since they are not classified in the ICF because of their large social and cultural variance [4]. The components: body functions, body structures, activities and participation, and environmental factors are abbreviated to BF, BS, AP and EF in this paper, respectively.

Table 1 Six items of the independent activities and 26 sub-items

A health care
(1) forming life rhythm and style
(2) understanding disease condition and life management
(3) understanding body condition and care
(4) maintaining and improving health condition
B psychological stability
(1) emotional stability
(2) understanding situations and coping with change
(3) enthusiasm for improving and overcoming difficulties in learning and daily living due to disabilities
C forming interpersonal interactions
(1) basis for interaction with others
(2) understanding intention and feeling
(3) understanding oneself and controlling behavior
(4) basis for participation in group
D understanding situations
(1) utilizing one's sensation
(2) responding to sensory and cognitive property
(3) utilizing assistive means for sensation
(4) understanding circumstance by integrated sensation
(5) concept formation relevant to cognition and behavior
E movement and mobility
(1) fundamental ability of posture and movement
(2) utilizing assistive means for posture and movement
(3) fundamental activity of daily living
(4) mobility
(5) activity for work and execution
F communication
(1) fundamental ability of communication
(2) receiving and producing language
(3) forming and applying language
(4) selection and use of communication means
(5) communication responding to situation

Table 2 Thirty items at the first level of the ICF

body functions (BF)
1 mental functions
2 sensory functions and pain
3 voice and speech functions
4 functions of the cardiovascular, haematological, immunological and respiratory systems
5 functions of the digestive, metabolic and endocrine systems
6 genitourinary and reproductive functions
7 neuromusculoskeletal and movement-related functions
8 functions of the skin and related structures
body structures (BS)
1 structures of the nervous system
2 the eye, ear and related structures
3 structures involved in voice and speech
4 structures of the cardiovascular, immunological and respiratory systems
5 structures related to the digestive, metabolic and endocrine systems
6 structures related to genitourinary and reproductive systems
7 structures related to movement
8 skin and related structures
activities and participation (AP)
1 learning and applying knowledge
2 general tasks and demands
3 communication
4 mobility
5 self-care
6 domestic life
7 interpersonal interactions and relationships
8 major life area
9 community, social and civic life
environmental factors (EF)
1 products and technology
2 natural environment and human-made change to environment
3 support and relationships
4 attitudes
5 services, systems and policies

Any items at the first level of ICF classification which were expected to be linked to each major items of the independent activities were selected. For example, {F communication} may be related at least to <3 voice and speech functions> in BF, <3 structures involved in voice and speech> in BS and <3 communication> in AP (Table 3). The assignment was executed by four teachers belonging to a school for special needs education. All the teachers had been engaged in special needs education for over 15 years and were also accustomed to the ICF. Results represent the numbers of teachers who defined compatibility with each item of the independent activities. The present study assumed that the compatibility was significant if the number of raters was above 3.

Table 3 An example of compatibility assignment between independent activities and ICF categories

independent activity	ICF	
	component	1st level item
F communication	body functions (BF)	3 voice and speech functions
	body structures (BS)	3 structures involved in voice and speech
	activities and participation (AP)	3 communications

Results

Table 4 shows the number of raters (teachers) who defined association between a specific item of the independent activities (row) and any compatible items from the ICF (column). As noted in the bottom column, the independent activities item {B psychological stability} had the largest number of compatibility with ICF items, while {A health care} and {D understanding situations} had the smallest number.

{A health care} was compatible with 6 items of the ICF. They were <1 mental functions> and <2 sensory functions and pain> in BF, <2 the eye, ear and related structures> in BS, <1 learning and applying knowledge> and <3 communication> in AP, and <1 products and technology> in EF. {B psychological stability} was compatible with 15 ICF items: 6 items in BF, 1 item in BS, 5 items in AP and 2 items in EF. {C forming interpersonal interactions} was compatible with 9 ICF items: 2 items in BF, 1 item in BS, 4 items in AP and 2 items in EF. {D understanding situations} was compatible with 6 ICF items: 2 items in BF, 1 item in BS, 2 items in AP and 1 item in EF. {E movement and mobility} was compatible with 10 ICF items: 3 items in BF, 1 item in BS, 2 items in AP and 3 items in EF. {F communication} was also compatible with 10 ICF items: 2 items in BF, 3 items in BS, 4 items in AP and 3 items in EF.

Considered in terms of ICF categorization, 6 of the 30 items in the ICF were linked to most of the independent activities items. They were <1 mental functions> and <2 sensory functions and pain> in BF, <1 learning and applying knowledge> and <3 communication> in AP followed by <1 products and technology> and <3 support and relationships> in EF. Most of the items in BS were associated specifically to a few independent activities items.

Table 4 The number of raters defining compatible items between ICF categories and independent activities

ICF	independent activities					
	A	B	C	D	E	F
	health care	psychological stability	forming interpersonal interactions	understanding situation	movement and mobility	communication
body functions (BF)						
1 mental functions	4	4	4	4	4	2
2 sensory functions and pain	4	4	2	4	3	3
3 voice and speech functions	2	3	3	2	1	4
4 functions of the cardiovascular, haematological,*	1	3	0	1	1	2
5 functions of the digestive, metabolic and endocrine systems	0	4	0	0	1	0
6 genitourinary and reproductive functions	1	4	0	1	1	0
7 neuromusculoskeletal and movement-related functions	2	2	0	2	4	2
8 functions of the skin and related structures	2	2	0	2	1	0
body structures (BS)						
1 structures of the nervous system	2	1	0	2	2	3
2 the eye, ear and related structures	3	1	2	3	2	3
3 structures involved in voice and speech	2	2	3	2	0	4
4 structures of the cardiovascular, immunological and**	0	2	0	0	1	2
5 structures related to the digestive, metabolic and respiratory systems	0	2	0	0	1	0
6 structures related to genitourinary and reproductive systems	1	3	0	1	1	0
7 structures related to movement	2	1	0	2	4	2
8 skin and related structures	1	1	0	1	1	0
activities and participation (AP)						
1 learning and applying knowledge	4	3	4	4	4	2
2 general tasks and demands	2	4	2	2	2	1
3 communication	4	3	4	4	1	4
4 mobility	1	1	0	1	4	2
5 self-care	0	2	0	0	2	1
6 domestic life	1	3	2	1	4	3
7 interpersonal interactions and relationships	1	4	3	1	1	3
8 major life area	0	2	2	0	1	2
9 community, social and civic life	0	3	3	0	2	3
environmental factors (EF)						
1 products and technology	4	2	1	4	4	3
2 natural environment and human-made change to environment	2	2	1	2	2	0
3 support and relationships	2	3	4	2	4	3
4 attitudes	0	4	4	0	2	2
5 services, systems and policies	2	1	0	2	3	3
The number of "3" or "4"						
6 15 9 6 10 10						

* 4 functions of the cardiovascular, haematological, immunological and respiratory systems

** 4 structures of the cardiovascular, immunological and respiratory systems

Discussion

The reports on compatibility between the independent activities and the ICF are limited only to Sakai et al. [5] and Sakai [6]. According to their research procedures, the specific terms and descriptions were quoted from the commentaries of the independent activities, and then were linked to third level items in the ICF (involving total 1,424 items) in detail. They concluded that the independent activities were

mostly compatible with the ICF items. However, the assignment procedures were conducted solely by the first author of the reports. The present investigation also clarified compatibility between the independent activities and a number of the first level items (involving 30 items) in the ICF components on the basis of examinations by four experienced teachers. Thus the present results are considered not only to be more reliable than those by Sakai et al. [5] and Sakai [6], but also to reflect more fully the functioning associated with educational needs and objects listed in the independent activities suggested by Kawai et al. [7].

In Table 5, linkage of the independent activities to first level ICF categories identified by Sakai et al. [5] is compared with that by this study (noted in closed circles and gray boxes, respectively). The independent activities item {C forming interpersonal interactions} and body structures in the ICF were not used because Sakai et al. based their categories on the former version of the course of study and considered that body structures were listed parallel with body functions. Compatibility was assigned to 54 and 40 of a total of 110 item combinations in Sakai et al. and this study, respectively, and 27 of them coincided with each other. The comparison suggests difference in the compatibility between the researchers and necessity of further multidisciplinary investigations by teachers and research specialists in order to safeguard reliability.

Table 5 Comparison of compatible items between Sakai et al. (closed circle) and this study (gray box)

ICF	independent activities					
	A	B	C	D	E	F
	health care	psychological stability	forming interpersonal interactions	understanding situation	movement and mobility	communication
body functions (BF)						
1 mental functions	●	●	▤	●	●	●
2 sensory functions and pain	▤	▤	▤	●	●	●
3 voice and speech functions	▤	▤	▤			●
4 functions of the cardiovascular, haematological, ·····*	●	▤	▤			
5 functions of the digestive, metabolic and endocrine systems	●	▤	▤			
6 genitourinary and reproductive functions	●	▤	▤			
7 neuromusculoskeletal and movement-related functions					●	
8 functions of the skin and related structures	●		▤			
activities and participation (AP)						
1 learning and applying knowledge	●	●	▤	●	●	●
2 general tasks and demands	●	●	▤		●	
3 communication	▤	▤	▤	●		●
4 mobility	●		▤		●	
5 self-care	●	●	▤		●	
6 domestic life	●	▤	▤			▤
7 interpersonal interactions and relationships		●	▤			●
8 major life area		●	▤			
9 community, social and civic life		●	▤		●	▤
environmental factors (EF)						
1 products and technology	●		▤	●	●	●
2 natural environment and human-made change to environment	●	●	▤			
3 support and relationships	●	●	▤		●	●
4 attitudes	●	●	▤		●	●
5 services, systems and policies	●		▤		▤	▤

* 4 functions of the cardiovascular, haematological, immunological and respiratory systems

Two BF (body function) items of the ICF: <1 mental functions> and <2 sensory functions and pain> were closely linked to the most of independent activities items, except in the case of {F communication} and {C forming interpersonal interactions}, respectively. The present raters have engaged in special needs education for students with intellectual, cognitive and emotional disabilities as teachers. Thus it is understood that <1 mental functions> were linked to the most items in the independent activities categorization. The linkage of <2 sensory functions and pain> seems to reflect recent intensive attention on pervasive developmental disorders (PDD) with specific sensory functions such as seeing, hearing and touching.

Two AP (activities and participation) items: <1 learning and applying knowledge> and <3 communication> were also closely linked to most items in the independent activities. The former item includes sub-items such as watching, listening, learning to read and write and solving problems. These learning abilities are fundamental to education and are considered to be associated with all the independent activities. The present investigation focused simply on the first level ICF items, however more detailed classification may be needed in actual school settings. As to the latter <3 communication>, intensive support and individual teaching plans for students with difficulty in communication and interpersonal interactions has been more required in recent special needs education [8]. Mita et al. [9] reported that communication problems became serious with advancing school grade. The present results appear to share a common background with the previous studies.

Two EF (environmental factors) items: <1 products and technology> and <3 support and relationships> were considered to be compatible with two-thirds of the independent activity items. Sub-items of <1 products and technology> involve those for personal consumption such as food and drugs and for mobility and transportation. Generally in schools for special needs education, there are many students taking anti-epileptics and tranquilizers. The number of students who need assistive devices for mobility is not small. In addition, it is reported that photographs, pictures and symbols are useful as assistive products for communication-production in children with severe disabilities and are introduced into school for special needs education [10, 11]. Thus <1 products and technology> seems to have significant compatibility with the independent activities. The item <3 support and relationships> involved the amount of physical or emotional support given by family, friends, neighbors, teachers, care providers and medical professionals. In the 2009 amendment of the course of study for schools for special needs education, the Ministry of Education, Culture, Sports, Science and Technology introduced the ICF concepts and addressed the necessity of understanding students with disabilities in relation to environmental factors [3]. The close linkage of assistive products and support for independent activities is considered to reflect daily practice of support by individual teachers in actual educational settings.

Conclusion

The present investigation clarified compatibility between independent activities in the course of study for schools for special needs education and ICF categories. Independent activities may originally belong to the ICF component “activities and participation”. However, the independent activities were linked not only to this component, but also to “body functions and structures” and “environmental factors”. All three components classified in the ICF can be quantified using the same generic scale referred to as the qualifier. Thus, it is suggested that combined use of independent activities and ICF categories provides a more useful, quantitative information to assess independent activities and to facilitate individual teaching plans. The present investigation focused on the independent activities in students with intellectual disabilities and pervasive developmental disorders. Further investigation is necessary to establish reliability of

compatibility between independent activities and ICF categories in students with various disabilities including visual and hearing impairments and physical disabilities.

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