

## Viewing and Learning Behavior of Aquarium Visitors

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### 1 Purpose of this study

In our country due to construction, a number of aquariums have increased, but many of them are considered to amusement facilities that are to entertain tourists, so that tourism or entertainment is central purpose of aquarium.

Especially during on holidays, aquariums can be very crowded, and it is rather difficult for visitors to study something and be spending enough time to learn. But we think that aquarium essentially has a very important purpose of improving awareness of environment protection, environmental education and social education, as a museum or an educational facility.

So that in this study, we studied viewing behavior of visitors, and tried to extract learning behavior and tried to understand what they mean. I would also like to pretend issues that aquariums' educational activities concerned.

### 2 Method

We use Marine Science Museum of Tokai University, of which Fig.1 shows the layout, there are three different types of exhibition rooms.

We have the first column tanks room, the second room of a large tank called "Oceanarium", and the third room of traditional train-window tanks.

The visitors come to the column tanks exhibition room first, there are twelve column tanks altogether in the room. and these tanks can be viewed from any location in the room. there are twelve separate column tanks irregularly arranged in the room.

And then, the second exhibition room is the

oceanarium There is a large water tank, which is 7 meters high. And there are decks and slopes so it can be viewed from various places.

The third exhibition room has conventional train-window tanks which are a number of individual smaller tanks.

Fig.1 shows the plan of Marine Science Museum of Tokai University and the range of shooting area.

So they are distinctive situated characteristics of three exhibition rooms and we tried to identify the viewing behavior in each of that three rooms.

We taped the behavior of the visitors using cameras installed on the ceiling and in the water tanks. Especially using the camera in the water tank facing towards the visitors, it can be observed the behavior and expressions of visitors very clearly. We installed three VTR cameras in each exhibition room.

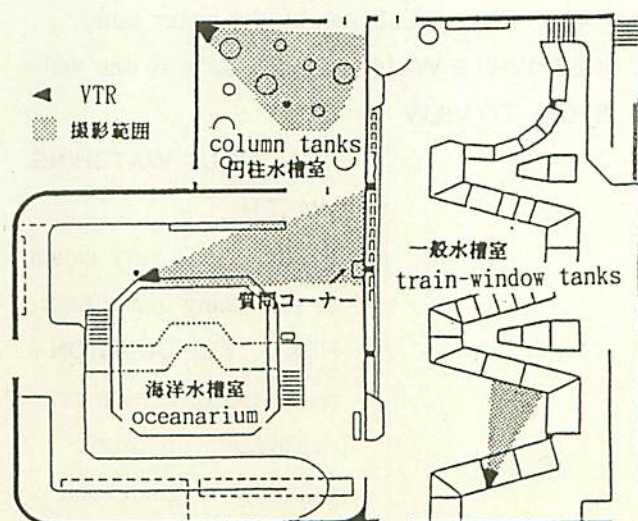


Fig.1 PLAN OF MARINE SCIENCE MUSEUM, TOKAI UNIVERSITY

We used cameras to record the behavior of visitors and also tracked down from behind the visitors. Using these records, we studied the behavior. We classified the viewing behavior and learning behavior, and tried to be rated them with exhibition rooms, location, if there are any different between schoolgroups and individual visitors.

The study conducted in Nov. 1993 and Nov. 1994, we selected holidays when a large number of visitors come to this aquarium.

### 3 Classification of the viewing behavior and learning behavior

We studied where visitors look and their behavior. So we observed that sometimes they passed by the water tanks, or looked as they walk, stopped in front of tanks, read graphics and interpretations, chatted with their accompanied person about the animals or fish in the watertank.

We classified the behavior as showing on Table 1. We mention that the visitors to the aquarium do not simply look at marinelife but try to learn something out of their viewing behavior.

Table 1 Classification of Behaviors

[ PASS BY [ VIEW WHILE WALK ABOUT [ STOP TO VIEW	just pass by the water tank
	look as one walks
	STOP
	WITHOUT WATCHING
	WATCH
	PEER look very closely at something inside tank
	READ EXPLANATION read interpretation or explanation on panel, pamphlet or guidebook on one's hand
POINT AT point at something, fish in the tank	

### 4 Different types of tanks and the behavior

Let's look at the different behavior on each exhibition room. In each of the three exhibition rooms, we identified different viewing behavior. Fig.2 shows all the behavior recorded column,oceanarium, train-window in that order, and we have just "PASS BY: passing by", "VIEW WHILE WALK ABOUT: look as one walks", "STOP TO VIEW: stop to look". The 40% of the behavior is observed as just "passing by", 10-20% as "look as one walks", 40% as "stop to look". And in column tanks exhibition room many just pass by, and in front of oceanarium they look as they walk, in front of train-windows tanks sometimes they stop of view.

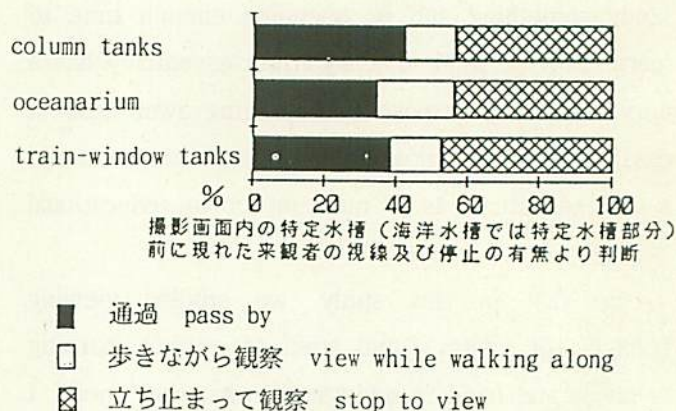


Fig.2 WAY OF VIEWING

Fig.3 shows time spent to view in each of the room. In the case of "oceanarium", nearly 50% was over one minute because this is the very big tank so it attracted the attentions of the visitors. And if they have accompanied person, they try to observe the fish as they talk with him/her about it and spend a lot of time, in front of the oceanarium.

And in case of train-window tank, the viewing time less than fifteen seconds is 60%. Although this tank is suited for close observation, they do not spend a lot of time looking closely at . The tank at this room is the last of the route, it seems like visitors are tired by the time they get to this tank or get bored.

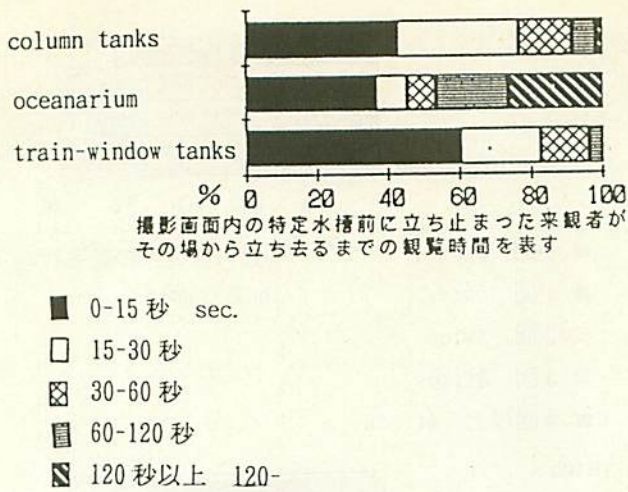


Fig.3 TIME OF VIEWING

And then, We show a number of different kinds of the combinations of behavior on Fig.4. We studied the behavior of looking very closely at something,

In case of column tanks, the people tended to look very closely at something, and many of those who stopped at the tank looked very closely. Since the column tanks room is the first stop on the route, people maintain very high interested and also these tanks can be viewed from anywhere in the room, and it is easy for them to view.

And for the oceanarium, many people read the explanation panel, it seems to check the name of the fish that they're serving. Since there are swimming a number of fish pieces in the tank, they wanted to confirm the name of the fish that they became interested in.

For the train-window tanks, a lot of people just look and leave the room, it seems like they are not actively engaged themselves in observing the fish.

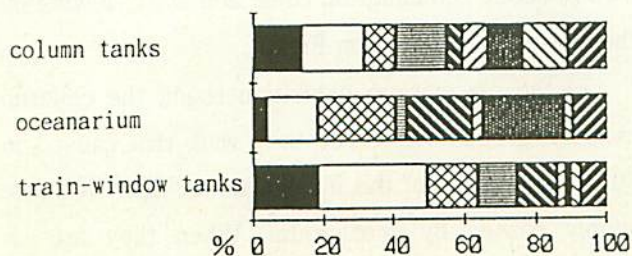


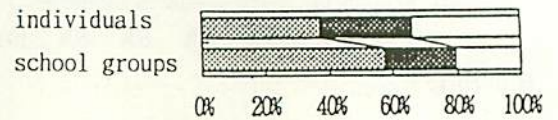
Fig.4 VIEWING BEHAVIOR

## 5 Comparative study between school students and individual children

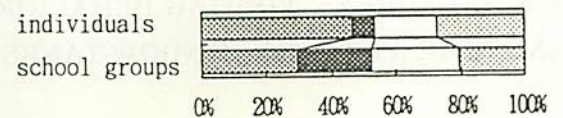
Next, We focused on children, and compared school groups and individual children who came on their own, and studied if there are different from their learning and viewing behavior. The behavior in the oceanarium room is showed on Fig.5.

Individuals did not stop to view, very few stopped to view. But if it excludes those who just pass by, 40% of the viewing behavior lasted over 60 seconds, so once they stopped they spent a lot of time in front of the tank.

Schoolgroup children stopped to view but the time spent was quite variable.



- 立ち止まり観覧 stop to view
- 歩き眺め view while
- 通過 pass by



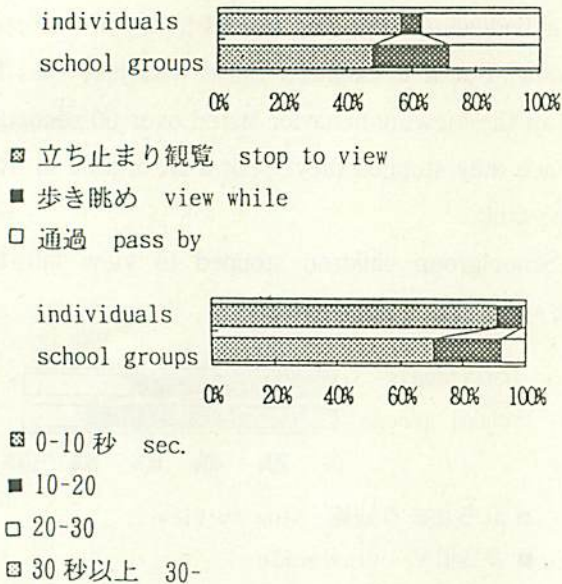
- 0-20 秒 sec.
- 20-45
- 45-90
- 90 秒以上 90-

Fig.5 CHILDREN'S VIEWING BEHAVIORS AND TIME AT "OCEANARIUM"(LARGE TANK)

- 見入らない stop without watching
- 見るだけ watch
- 見る+指差し watch+point at
- 見入る+覗き込み watch+peer
- 見入る+解説 watch+read explanations
- 見入る+指差し+覗き watch+point at+peer
- 見入る+指差し+解説 watch+point at+read explanations
- 見入る+覗き+解説 watch+peer+read explanations
- 見入る+指差し+覗き+解説 watch+point at+peer+read explanations

Next is the same thing but for train-window tank, on Fig.6.

In individuals those who came on their own, many of them stopped to view, and the time spent was longer than school groups.

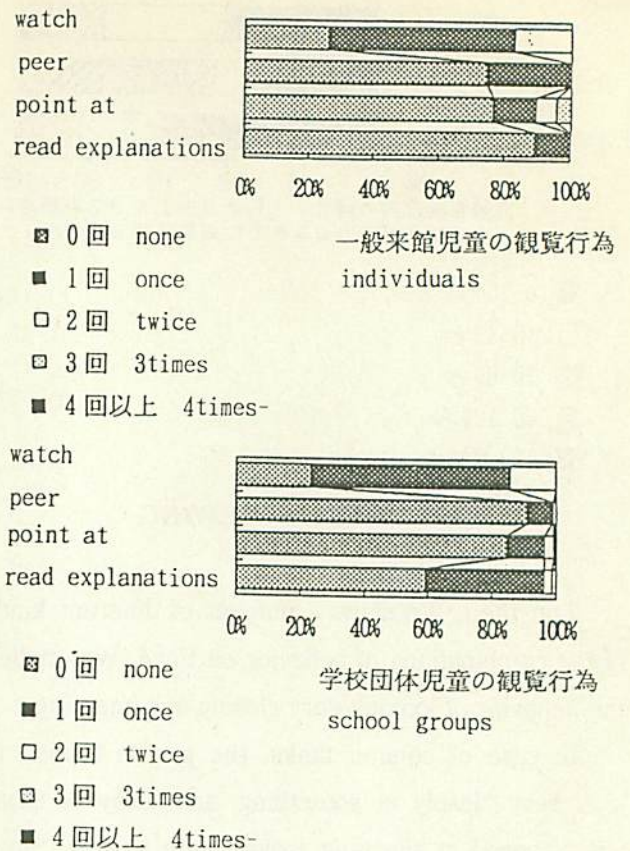


**Fig.6 CHILDRENS' VIEWING BEHAVIORS AND TIME AT TRAIN-WINDOW TANKS**

As far as break down the behavior on Fig.7 , many of visitors looked closely or pointed up something, and these behavior are quite dominant in individual who came on their own, so it seems like they are quite active.

And for school group children, they read interpretation and explanation, but they seldom look closely or point up something. They do not seem to be interested in matching the panel with the actual fish.

It may have to do with the characteristics of the tanks and the fish pieces, also at school the children are quite used to read explanation books, but they are not quite used to do reading with live fish.



**Fig.7 CHILDRENS' VIEWING BEHAVIORS**

### 6 Behavior of school groups

When children come in school groups, sometimes they have to stay in small groups , and other times they may be allowed to go on their own. We compared with two types of groups. We now show Fig.8.

When they view in small groups, usually they form of 5, and as the groups they walk around ("small group" on Fig.8).

Sometimes they are allowed to view on their own of about 120 children, come and start viewing on their own ("individual" on Fig.8).

In the oceanarium exhibition room, the children in small groups viewed as they walk that caused to 30 %. And many of the individuals on their own just simply passed by oceanarium. When they are on their own, sometimes the entrance of the exhibition room get quite crowded and they just passed by.

The time spent is shorter for small group children, though individuals those who are on their own spent more time in viewing if they become interested in something.

## 7 Conclusion

(1)

At the Marine Science Museum, we studied the viewing behavior of visitors using VTR cameras and also by recording the behavior from behind.

(2)

By analysing their behavior, we learned that they didn't simply view but also try to learn something as they view,

(3)

There are differences in behavior depending upon the exhibition rooms. In the oceanarium exhibition room, compared with train-window exhibition room, they tend to view as they walk, and when they stop they read explanations or the panel.

(4)

School group children tend to read the panel and explanation, compared with those children who come on their own.

(5)

The children come from school, it is important that they view at their own pace rather than staying in groups.

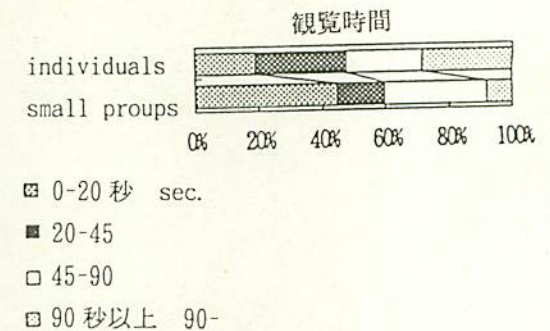
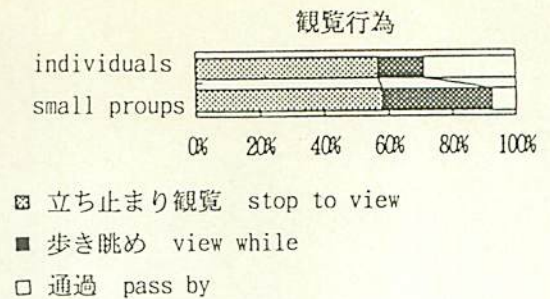


Fig.8 SCHOOL CHILDRENS' VIEWING BEHAVIORS AND TIME AT "OCEANARIUM"

## References

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- 2) Nomura, T, Ohara, K. et al. (1993): The Visitors' Caused by the Exhibition and the Curator's Explanation in Museum, Journal of Archit. Plann. Environ. Engng, AIJ, No.445, Mar., 1993, pp.73-81